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DESIGN VERIFICATION TEST REPORT FOR THE M43A1 UPGRADE

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ENVIRONMENTAL TECHNOLOGIES GROUP, INC. Baltimore, MD 21284-9840

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13. ABSTRACT (Maximum 200 words) This report provides the results of portion of the M43-APD. The M43-APD, developed the M43-APD Chemical Agent Detector components and replacing them with to nerve agents, improved interference was conducted in two phases under a temperature storage/operation, high temperature at ERDEC and included a testing at ERDEC's M-Field. In generated in the detection of GD vapor at	rototype Ion Mobility Spectreloped by Environmental Technology. The M43A1 Detector was ETG's IMS-based component rejection for fewer false also ontract DAAM01-97-C-0033 mperature storage/operation, gent vapor testing at the Governeral, the M43-APD prototyp	ometry (IMS) upgrade hnologies Group, Inc. modified by removing ts. The upgraded M43 arms and the capability. The first phase was pand simulant response ernment's surety facilities performed well, how	ed M43A1 Detectors, identified as (ETG), is an adaption of ETG's gethe existing ionization detection 3-APD provides increased sensitivity to detect blister agents. The testing performed at ETG and included low testing. The second phase was ties and battlefield interference wever, some minor deficiencies were
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PREFACE

The work described in this report was authorized under Contract No. DAAM01-97-C-0033. This work was started in September 1997 and completed in November 1998.

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DESIGN VERIFICATION TEST REPORT FOR THE M43A1 UPGRADE

1. EXECUTIVE SUMMARY

The M43A1 Chemical Detector, part of the M8A1 Chemical Detection System, is and will be for the immediate future the primary chemical detector for the U.S. forces worldwide. Since its initial fielding in 1985, approximately 35,000 systems have been manufactured and placed in over 20 countries. The M43A1 Upgrade Chemical Agent Detector (M43-APD) has been developed at ETG to improve the performance and extend the useful life of the current worldwide inventory.

The M43-APD upgrade is an adaptation of ETG's ICAM-APD chemical agent detector. The M43A1 detector is refurbished by removing the existing ionization detector (cell, pump, electronics) and replacing it with ETG's IMS-based sensor module. With the new sensor module, the M43A1 upgrade now has the capability to detect blister agents (the baseline M43A1 detects only nerve agents) and offers much improved interference rejection for fewer false alarms.

Under contract DAAM01-97-C-0033 to the U.S. Army ERDEC, ETG manufactured and tested two prototype M43-APD detectors. The testing was conducted in two phases. The first phase was performed at ETG and included low temperature storage/operation, high temperature storage/operation, and simulant response testing. The second phase was performed at ERDEC and included agent vapor testing at the Government's surety lab, and battlefield interference testing at M-field.

In general, the M43-APD detectors performed very well. The electronics, pumps, sensor and other hardware operated through the duration of the testing without a single failure. The agent vapor testing showed that the sensitivity and response times for the M43-APD are comparable to those established by ETG's ICAM-APD. Battlefield interference testing also showed that the M43-APD retains the ICAM-APD's high level of interference rejection.

There were, however, two problems encountered during the Government's agent vapor testing. In the first instance, the detectors did not alarm to GD vapor at ambient lab temperature. The test data showed that the GD agent vapor was producing strong peaks in the IMS signature, indicating good sensitivity, but the peaks were outside of the alarm windows that are defined by the agent detection algorithm. These no-alarm conditions can be improved with modification to the agent detection algorithm.

In the second instance, the M43-APD detectors did not alarm to HD at an elevated temperature of +52 °C. There is a contaminant in the negative-mode IMS signature which impedes the formation of a strong reactant ion, with a corresponding reduction in the sensitivity to HD. The precise location of the contaminant could not be isolated, but it appears to be within the M43A1 case assemblies. With some minor changes to the M43-APD pneumatics, ETG believes that this problem can be overcome and the M43-APD will have the same agent detection as the ICAM-APD.

2. INTRODUCTION

2.1 <u>Test objectives</u>. The M43A1 Upgrade Chemical Agent Detector (M43-APD) was developed by ETG under contract to the U.S. Army ERDEC (DAAM01-97-C-0033). This contract was part of an engineering study to determine the feasibility of developing a low-cost option to upgrade the capability of the existing M43A1 Chemical Agent Detectors and extend their useful life.

Testing was conducted in two separate phases. In the first phase, ETG conducted design verification testing of two prototype M43-APD detectors. This testing was conducted prior to delivery of the prototypes to the Government, and was limited to simulant testing using H-type and G-type simulants, and operational testing at low temperature (-40 °F) and high temperature (+120 °F).

The second phase was government evaluation testing to characterize the agent-detection performance and the false-alarm performance of the prototype detectors. The second phase of testing was performed at ERDEC using not only the two ETG prototype M43-APD detectors, but also prototype detectors from two other companies. The objective of this testing was to validate contractor performance claims, and to provide a comparison of the prototypes against each other and against the Army's general requirements for chemical-agent detection.

2.2 <u>Description of the equipment under test: M43A1 Upgrade Chemical Agent Detector.</u>
The M43A1 Chemical Detector, part of the M8A1 Chemical Detection System, is and will be for the immediate future the primary chemical detector for the U.S. forces worldwide. Since its initial fielding in 1985, approximately 35,000 systems have been manufactured and placed in over 20 countries. The M43A1 Upgrade Chemical Agent Detector (M43-APD) has been developed at ETG to improve the performance and extend the useful life of the current worldwide inventory.

The M43-APD is shown in Figures 1 and 2. In general, the M43A1 detector is refurbished by removing the existing ionization detector (cell, pumps, electronics) and replacing it with ETG's IMS-based ICAM-APD sensor module. This approach improves the performance over the baseline M43A1 detector in several ways. First, the IMS sensor will detect blister agents (mustard gases and lewisite) which the baseline M43A1 does not. Second, the IMS sensor has a lower limit of detection for nerve agents, with response times generally between 10 and 30 seconds. Third, the ETG sensor contains an automatic cleardown following an alarm, eliminating the need for a soldier to manually reset the detector. Finally, the ETG sensor is remarkably better at rejecting battlefield interferences.



FIGURE 1. Prototype M43A1 Upgrade Chemical Agent Detector (M43-APD)

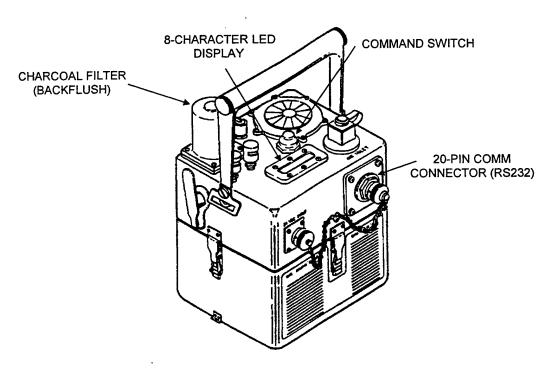


FIGURE 2. M43A1 Upgade (M43-APD), overview of new features.

- 2.2.1 Serial numbers of the M43-APD detectors. Two prototype M43-APD chemical agent detectors were tested. The serial numbers are 980206-4 and 980206-5. Both detectors are identical in physical configuration. Serial number 980206-4 is also referred to as Detector 4 in this report and is the first Government prototype. Serial number 980206-5 is also referred to as Detector 5 in this report and is the second Government prototype.
- **2.2.2 Software version**. The version of the operating software and agent-detection algorithm used during each phase of the testing is shown below in Table 1. For reference, a summary of software development during the M43-APD development is included as Table 2.

TABLE 1. Software version used during M43-APD testing

Test	<u>Software Version</u>
Low temperature	M502a
High temperature	M502b
Simulant sensitivity	M502a / M502b
Agent vapor	M502b
M-field	M502b / M502d

TABLE 2. Summary of improvements made to the ETG operating software and agent-detection algorithm that have been made since ICAM-APD testing in July 97 (DAAM01-97-M-0071) and which have been incorporated into the M43-APD software.

Date	Version		Features and Changes
June 97	A422c	•	Configuration baseline, delivered with 6 ICAM-APD detectors at the conclusion of contract DAAM01-97-M-0071.
June 97	A423c	•	Provides additional interference rejection for AFFF.
Aug 97	A425b	•	Updated GA, GB, GD, VX detection windows based on testing during June and July 1997.
		•	Revised criteria which defines allowable positions of the reactant ion peaks during startup.
		•	Revised the criteria that defines when the detector automatically re- calibrates based on movement of the reactant ions.
,		•	Revised agent-detection classifiers that are used during cold- temperature operation.
		•	Raised the upper limit at which the ammonia-source heater is turned

Date	Version	Features and Changes
		on at cold temperatures.
Mar 98	M500	 Added hardware drivers and operator interfaces required to operate the M43-APD.
Mar 98	M502a	• Updated the agent-detection algorithm to improve GD sensitivity.
		 Revised agent-detection classifiers that are used during cold- temperature operation to correct for differences in the internal case temperature between ICAM-APD and M43-APD.
		 Corrected a software bug which was preventing the ammonia source heater from turning on at low temperatures.
		 Raised the upper limit at which the ammonia-source heater is turned on at cold temperatures to correct for differences in the internal case temperature between ICAM-APD and M43-APD.
7 May 98	M502b	• Lowered the alarm thresholds for HD in order to allow the H confidence sample to alarm following high-temperature storage.
30 Aug 98	M502d	 Disabled the built-in test feature which checks for a short across the remote terminals in order to allow the M43-APD to operate with the Government's prototype battery box.

3. ETG DESIGN VERIFICATION TESTING: HIGH/LOW TEMPERATURE AND SIMULANT SENSITIVITY

Design verification testing of the two prototype detectors was performed at ETG from March through May 1998. The testing included climatic testing (high temperature storage/operation, low temperature storage/operation), and simulant response testing.

Climatic testing was performed in ETG's environmental chambers by conditioning the detectors in a shutdown state, and then performing a startup test. Following startup, the detectors were operated for four hours and confidence tests performed at the end of this period.

Simulant response testing was performed using the standards generator that ETG uses for acceptance testing of the CAM and ICAM-APD. The simulant concentrations are the same as described in the CAM purchase descriptions for a "7-bar H" and "5-bar G" response. The requirement is that the detectors alarm within 10 seconds to these concentrations and then clear to a no-alarm status within two minutes.

The M43-APD detectors passed all design verification testing. Detailed test logs are presented in Table 3 and Table 4.

During high temperature testing, the test data showed a contaminant in the negative mode signature (blister mode). The contaminant interferes with formation of both the negative reference peak and subsequently the ability of the H-simulant from forming a well-defined ion peak. As a result, the detector has reduced sensitivity to the H confidence sample, and as we discovered during the Government's agent vapor testing it has also reduced the sensitivity to HD agent vapor. The source of the contamination appears to be a material within the M43A1 case assembly which is outgassing at high temperatures. The contaminant probably enters the sensor module through the sieve pack assembly, which uses a vent to equalize pressure between the interior volume of the cell and the case interior.

The precise source of the contamination has not yet been isolated, and it is unlikely that a single component will be found which is the sole contributor. Regardless of whether the source of contamination is found, there is one design approach to minimize its impact. The current sieve pack vents to the inside of the case, therefore the sieve breather effect is pulling case air into the sensor. The pneumatics can be modified to vent to the outside of the case, probably through the inlet assembly.

TABLE 3. Test log, M43-APD design verification testing, detector S/N 980206-4

DATE		DESCRIPTION	COMMENTS
3/24/98	6:00 PM	STARTUP TEST (AMBIENT) CONFIDENCE CHECK (AMBIENT) H/G SIMULANT TEST	PASSED PASSED PASSED
	7:00 PM	MOVED TO EVC 001, BEGIN COLD SOAK AT -40 C	
3/25/98	12:10 PM	STARTUP (-40 C) CONFIDENCE CHECK (-40 C)	PASSED (NOTE 1) PASSED (NOTE 1)
	5:28 PM	CONFIDENCE CHECK (-30 C)	PASSED (NOTE 1)
3/26/98	1:15 PM	CONFIDENCE CHECK (-30 C)	PASSED (NOTE 1)
	3:15 PM	BEGIN RAMP TO AMBIENT TEMPERATURE	
3/27/98	9:15 AM	STARTUP (AMBIENT) CONFIDENCE CHECK (AMBIENT)	PASSED PASSED

NOTE 1 -- ALTHOUGH DETECTOR 4 PASSES THE PERFORMANCE CHECKS, THE SIGNATURES SHOW BROAD-BAND NOISE WHICH EXCEED M43-APD / ICAM-APD ACCEPTANCE CRITERIA. CAUSE WAS ISOLATED TO A GROUND LOOP CREATED BY CONTACT BETWEEN THE IMS SENSOR MODULE AND THE NICKEL PLATING OF THE M43A1 CASETOP. RE-TESTED ON 3/30 TO 4/1. (NOTE THAT DETECTOR 4 IS THE FIRST OF TWO GOVERNMENT PROTOTYPES.

3/30/98	3:15 PM	STARTUP (AMBIENT) CONFIDENCE CHECK (AMBIENT) H/G SIMULANT TEST	PASSED (RE-TEST) PASSED (RE-TEST) PASSED (RE-TEST)
	5:45 PM	MOVED TO EVC 001, BEGIN COLD SOAK AT -40 C	
3/31/98	8:38 AM	STARTUP (-40 C) CONFIDENCE CHECK (-40 C)	PASSED (RE-TEST) PASSED (RE-TEST)
	4:30 PM	CONFIDENCE CHECK (-30 C)	PASSED (RE-TEST)
4/1/98	8:35 AM	CONFIDENCE CHECK (-30 C)	PASSED (RE-TEST)
	8:45 AM	BEGIN RAMP TO AMBIENT TEMPERATURE	
	3:00 PM	CONFIDENCE CHECK (AMBIENT)	PASSED (RE-TEST)
5/22/98	4:17 PM	STARTUP (AMBIENT) CONFIDENCE CHECK (AMBIENT) H/G SIMULANT TEST	PASSED (NOTE 2) PASSED PASSED
	6:15 PM	MOVE TO EVC POOL NO. 0277, BEGIN HO	OT SOAK AT +52 C
5/26/98	8:57 AM	STARTUP (+52 C) CONFIDENCE CHECK (+52 C)	PASSED PASSED
	1:16 PM	CONFIDENCE CHECK (+52 C)	PASSED

1:16 PM CONFIDENCE CHECK (+52 C) PASSED

NOTE 2 - FOLLOWING THE SUCCESSFUL COMPLETION OF LOW-TEMPERATURE TESTING,
THE TEST PROGRAM WAS INTERUPTED DUE TO PROBLEMS WITH DETECTOR 5, THE
SECOND OF THE TWO GOVERNMENT PROTOTYPES. DURING HIGH-TEMPERATURE
TESTING OF DETECTOR 5 (SEE TABLE 4 ENTRY FOR 3/31/98), THERE WAS A
CONTAMINANT IN BOTH THE NEGATIVE AND POSITIVE MODES. THE IMPACT OF THE
CONTAMINANT WAS TO INCREASE STARTUP TIME BY REDUCING SENSITIVITY TO THE H
CONFIDENCE SAMPLE. FOLLOWING AN INVESTIGATION, THE FOLLOWING CORRECTIVE
ACTIONS WERE IMPLEMENTED ON BOTH OF THE PROTOTYPE DETECTORS, AND THE
TEST PROGRAM WAS RE-STARTED. THE COMPONENTS WERE WASHED AND BAKED,
ACTIVATED CHARCOAL WAS ADDED TO THE VENT WITHIN THE SIEVE PACK ASSEMBLY,
THE INLET ASSEMBLY WAS REDESIGNED, AND THE H-ALARM THRESHOLD WAS
LOWERED.

TABLE 4. Test log, M43-APD design verification testing, detector S/N 980206-5

<u>DATE</u> 3/24/98	6:00 PM	DESCRIPTION STARTUP TEST (AMBIENT) CONFIDENCE CHECK (AMBIENT) H/G SIMULANT TEST	PASSED PASSED PASSED
	7:00 PM	MOVED TO EVC 001, BEGIN COLD SOAK AT -40 C	
3/25/98	12:10 PM	STARTUP (-40 C) CONFIDENCE CHECK (-40 C)	PASSED PASSED
	5:37 PM	CONFIDENCE CHECK (-30 C)	PASSED
3/26/98	1:32 PM	CONFIDENCE CHECK (-30 C)	PASSED
	3:15 PM	BEGIN RAMP TO AMBIENT TEMPERATURE	
3/27/98	9:30 AM	STARTUP (AMBIENT) CONFIDENCE CHECK (AMBIENT)	PASSED PASSED
3/30/98	5:00 PM	MOVE TO EVC POOL NO. 0277, BEGIN HO	T SOAK AT +52 C
3/31/98	9:30 AM	STARTUP (+52 C)	FAILED (NOTE 3)

NOTE 3 -- DATA AND SIGNATURES SHOW A CONTAMINANT IN THE POSITIVE MODE WHICH PROHIBITS FORMATION OF THE NH3 REACTANT ION. CAUSE DETERMINED TO BE A LEAK IN THE SIEVE PACK ASSEMBLY. CORRECTIVE ACTION WAS TO REMOVE AND REPLACE THE SIEVE PACK ASSEMBLY. ALSO, CONTAMINANTS IN THE NEGATIVE MODE ARE REDUCING SENSITIVITY TO H CONFIDENCE SAMPLE. CORRECTIVE ACTIONS -- WASHED AND BAKED COMPONENTS, ADDED ACTIVATED CHARCOAL TO VENTS WITHIN THE SIEVE PACK ASSEMBLY, RE-DESIGNED INLET ASSEMBLY AND INLET CAP, LOWERED ALARM THRESHOLD REQUIRED FOR H ALARM. RE-TESTED 5/22 TO 5/26.

5/22/98	5:30 PM	STARTUP (AMBIENT) CONFIDENCE CHECK (AMBIENT) H/G SIMULANT TEST	PASSED (RE-TEST) PASSED PASSED
	6:15 PM	MOVE TO EVC POOL NO. 0277, BEGIN HO	T SOAK AT +52 C
5/26/98	8:40 AM	STARTUP (+52 C) CONFIDENCE CHECK (+52 C)	PASSED PASSED
	1:28 PM	CONFIDENCE CHECK (+52 C)	PASSED

4. GOVERNMENT TESTING, AGENT VAPOR

Two prototype M43-APD detectors were subjected to agent-vapor evaluation testing at the ERDEC surety laboratories from 3 Aug to 18 Aug 1998. ETG personnel were present to support testing, perform maintenance and capture detector digital data. Table 5 summarizes the agent test results.

In general, the M43-APD detectors performed very well. The electronics, pumps, sensor and other hardware operated through the duration of the testing without a single failure. The agent vapor testing showed that the sensitivity and response times for the M43-APD are comparable to those established by ETG's ICAM-APD. Battlefield interference testing also showed that the M43-APD retains the ICAM-APD's high level of interference rejection. Most test trials resulted in proper alarms as expected. The exceptions are described below.

In most cases GD did not alarm at ambient lab temperature (+20 °C). Analysis showed that the GD agent vapor produced strong peaks in the IMS signature, indicating good sensitivity. However, the position of the peak was not within the alarm criteria for GD as defined by the agent detection algorithm. The positions for all IMS peaks (reactant ion reference and agent) were at longer drift times than normal (to the right). This caused the peak location ratios (PLR) to be smaller than normal (to the left). Although these no-alarm conditions could be improved by modifying the GD peak position criteria, the improved agent detection may come at the expense of increased false alarms. Evaluation of interference materials with peaks in this region showed a potential for false alarms. One possibility is that replacing the sieve pack with newly charged one would restore the peak drift times and ratios to their normal values. Any hardware evaluation would require additional effort to isolate the cause of this observation.

In most cases GB alarmed at low temperature (-30 °C), but two misses did occur. The GB peak location ratios were near the lower edge of the defined window. This window could be expanded. Evaluation of interference material peaks showed no new potential GB false alarms in the region of interest. However, as with GD, a hardware evaluation may produce an action for restoring peak positions.

VX detection was very good at all conditions. In the case of ambient temperature, some no-alarms occurred earlier in the day before the concentration of VX was accurately established. Also, prior to VX testing, high concentration HD was performed at 50 mg/m³ and significant HD peaks were observed, sometimes producing HD alarms before a VX alarm was triggered. As time went on, the residual HD disappeared and VX was detected.

Both H confidence sample and HD agent detection were affected by high temperature operation. The test chamber temperature was +52 °C, while the internal detector temperature was observed to be +53 to +54 °C. In most cases an H-simulant and HD peaks positions were in the HD window, but the amplitudes (SECD) were below the

alarm threshold. The negative reactant ion (Rx-) peak was observed to be a triple peak, rather than the normal single peak. It should be noted that during outdoor interference testing on 31 Aug, the ambient temperature was +34 °C, but because of sun loading the internal detector temperature was measured at +48 to 49 °C. Under these conditions, no triple peak was observed for the Rx- ion and the H confidence sample alarmed consistently with a very strong peak.

TABLE 5. Summary of Agent Vapor Testing, ERDEC, August 1998

Date	Agent	Conc.	RH	Temp.	Det#	Response	Alarm Time (mm:ss)	Clear Time (mm:ss)	Notes
8/3/98	GD	0.091	0%	20	1	NO ALARM			1
8/3/98	GD	0.091	0%	20	1	NO ALARM			1
8/3/98	GD	0.091	0%	20	1	NO ALARM			1
8/3/98	GD	0.091	0%	20	2	NO ALARM			1
8/3/98	GD	0.091	0%	20	2	NO ALARM			1
8/3/98	GD	0.091	0%	20	2	NO ALARM			1
8/4/98	GD	0.122	90	20	1	NO ALARM			1
8/4/98	GD	0.122	90	20	2	NO ALARM			1
8/4/98	GD	0.13	90	20	1	NO ALARM			1
8/4/98	GD	0.13	90	20	2	NO ALARM			1
8/4/98	GD	0.122	90	20	1	NO ALARM			1
8/4/98	GD	0.122	90	20	2	NO ALARM			1
8/4/98	GD	1.017	90	20	1	NRV LOW	01:13	01:54	
8/4/98	GD	1.017	90	20	2	NO ALARM			1
8/4/98	GD	1	90	20	1	NRV LOW	00:10	00:37	
8/4/98	GD	1	90	20	2	NO ALARM			1
8/4/98	GD	1	90	20	1	NRV LOW	00:20	00:47	
8/4/98	GD	1	90	20	1	NRV LOW	00:40		2
8/4/98	GD	1	90	20	2	NO ALARM			1
8/4/98	GD	1	90	20	2	NO ALARM			1
8/5/98	GA	0.104	2	20	1	NRV LOW	00:32	00:30	
8/5/98	GA	0.104	2	20	2	NRV LOW	00:13	00:33	
8/5/98	GA	0.115	2	20	1	NRV LOW	00:19	00:29	
8/5/98	GA	0.115	2	20	2	NRV LOW	00:15	00:30	
8/5/98	GA	0.116	2	20	1	NRV LOW	00:20	00:30	
8/5/98	GA	0.116	2	20	2	NRV LOW	00:10	00:30	
8/5/98	GA	0.14	92	20	1	NRV LOW	00:23	00:18	
8/5/98	GA	0.14	92	20	2	NRV LOW	00:15	00:30	,
8/5/98	GA	0.111	92	20	1	NRV LOW	00:25	00:30	
8/5/98	GA	0.111	92	20	2	NRV LOW	00:13	00:29	
8/5/98	GA	0.119	92	20	1	NRV LOW	00:34	00:29	
8/5/98	GA	0.119	92	20	2	NRV LOW	00:14	00:31	

TABLE 5. Summary of Agent Vapor Testing, ERDEC, August 1998

Date	Agent	Conc. (ug/L)	RH	Temp.	Det #	Response	Alarm Time (mm:ss)	Clear Time (mm:ss)	Notes
9/6/09	GB	0.099	3	20	1	NRV LOW	00:20	00:19	
8/6/98		0.099	3	20	2	NRV LOW	00:18	00:22	
8/6/98	GB	0.033	3	20	1	NRV LOW	00:17	00:20	
8/6/98	GB	0.113	3	20	2	NRV LOW	00:20	00:24	
8/6/98	GB	0.117	3	20	1	NRV LOW	00:17	00:19	
8/6/98	GB	0.117	3	20	2	NRV LOW	00:18	00:19	
8/6/98	GB	0.117	90	20	1	NRV LOW	00:16	00:20	
8/6/98	GB		90	20	2	NRV LOW	00:18	00:19	
8/6/98	GB	0.108	90	20	1	NRV LOW	00:20	00:20	
8/6/98	GB	0.109	90	20	2	NRV LOW	00:18	00:19	
8/6/98	GB	0.109		20	1	NRV LOW	00:15	00:19	
8/6/98	GB	0.114	90	20	2	NRV LOW	00:17	00:19	
8/6/98	GB	0.114	90			BLS LOW	00:06	00:30	
8/7/98	HD	1.933	3	20	2	BLS LOW	00:03	00:29	
8/7/98	HD	1.933	3	20		BLS LOW	00:04	00:29	
8/7/98	HD	2.12	3	20	2	BLS LOW	00:03	00:26	
8/7/98	HD	2.12	3	20		BLS LOW	00:06	00:29	
8/7/98	HD	2.047	3	20	1 2	BLS LOW	00:09	00:27	
8/7/98	HD	2.047	3	20	2	BLS LOW	00:07	00:29	
8/7/98	HD	2.197	88	20	2	BLS LOW	00:07	00:30	
8/7/98	HD	2.197	88	20	$\frac{2}{1}$	BLS LOW	00:07	00:29	
8/7/98	HD	2.154	88	20	2	BLS LOW	00:08	00:29	
8/7/98	HD	2.154	88	20	1	BLS LOW	00:04	00:29	
8/7/98	HD	2.258	88	20	2	BLS LOW	00:04	00:26	
8/7/98	HD	2.258	88	20	1	BLS LOW	00:05	01:10	
8/7/98	HD	36	3	20	2	BLS LOW	00:07	01:03	3
8/7/98	HD	36	3	20	1	BLS LOW	00:06	01:07	
8/7/98	HD	34	3	20	2	BLS LOW	00:02	00:57	
8/7/98	HD	34	3	20	1 1	BLS LOW	00:06	01:30	3
8/7/98	HD	52.917	3	20	2	BLS LOW	00:03	00:59	
8/7/98	HD	52.917		20	1	NRV LOW	01:27	00:11	4, 5
8/8/98	VX	?	3	20	2	NRV LOW	01:48	00:26	4, 5
8/8/98	VX	?		20		NO ALARM		00:00	4, 5
8/8/98	VX	?	3	20	2	NRV LOW	00:25	00:21	
8/8/98	VX	0.058	3		1	NRV LOW	00:55	00:26	1
8/8/98	VX	0.058	3	20	1	NRV LOW	00:10	00:25	
8/8/98	VX	0.15	3	20	2	NRV LOW	00:13	00:23	
8/8/98	VX	0.15	3	20	1	NO ALARM	+	00:00	4, 5
8/8/98	VX	0.29	90	20	2	NRV LOW	01:16	00:20	1
8/8/98	VX	0.11	90	20		NRV LOW	00:38	00:18	
8/8/98	VX	0.1	90	20	1 1	NRV LOW	00:09	00:15	1
8/8/98	VX	0.1	90	20	1	NRV LOW	00:12	00:23	+
8/8/98	VX	0.31	90	20	2		00:12	00:30	-
8/8/98	VX	0.31	90	20	1 1	NRV LOW		00:30	+
8/8/98	VX	0.31	90	20	1	NRV LOW	00:15	00.24	

TABLE 5. Summary of Agent Vapor Testing, ERDEC, August 1998

Date	Agent	Conc.	RH	Temp.	Det#	Response	Alarm Time (mm:ss)	Clear Time (mm:ss)	Notes
0/10/09	HD	2.06	25	52	1	NO ALARM			6
8/10/98		2.06	25	52	2	NO ALARM			6
8/10/98	HD			-30	1	NO ALARM			7
8/11/98	GB	0.112	0	-30	2	NRV LOW	00:08	00:22	
8/11/98	GB	0.112 0.112	0	-30	1	NO ALARM			7, 8
8/11/98	GB		0	-30	2	NRV LOW	00:05	00:24	
8/11/98	GB	0.112	0	-30	1	NRV LOW	00:12	00:23	
8/11/98	GB	0.104	0	-30	2	NRV LOW	00:06	00:22	
8/11/98	GB	0.104	0	-30	1	NRV LOW	00:24	00:20	
8/11/98	GB	0.104			2	NRV LOW	00:20	00:11	
8/11/98	GB	0.104	0	-30		NRV MED	00:16	00:25	
8/12/98	GD	0.114	0	-30	1	NRV MED	00:10	00:25	
8/12/98	GD	0.114	0	-30	2		00:07	00:33	
8/12/98	GD	0.114	0	-30	1	NRV MED	00:12	00:24	
8/12/98	GD	0.114	0	-30	2	NRV MED	00:07	00:25	
8/12/98	GD	0.114	0	-30	1	NRV MED	00:14	00:24	
8/12/98	GD	0.114	0	-30	2	NRV MED	00:07	00:20	
8/13/98	GB	0.121	29	52	1	NRV LOW	00:20	00:20	
8/13/98	GB	0.121	29	52	2	NRV LOW	00:21	00:21	
8/13/98	GB	0.121	29	52	1	NRV LOW	00:19	00:23	
8/13/98	GB	0.121	29	52	2	NRV LOW NRV LOW	00:20	00:20	
8/13/98	GB	0.125	29	52	1	NRV LOW NRV LOW	00:20	00:20	
8/13/98	GB	0.125	29	52	2	NRV LOW	00:16	00:20	
8/13/98	GB	0.125	29	52	2	NRV LOW	00:19	00:20	
8/13/98	GB	0.125	29	52		NRV LOW	01:20	00:20	
8/13/98	GD	0.126	29	52	1	NRV LOW	00:08	00:20	
8/13/98	GD	0.126	29	52	2	NRV LOW	00:07	00:20	
8/13/98	GD	0.126	29	52	2	NRV LOW	00:07	00:21	
8/13/98	GD	0.126	29	52		NO ALARM	00.05	00.22	1
8/13/98	GD	0.118	29	52	2	NRV LOW	00:08	00:20	
8/13/98	GD	0.118	29	52	1	NRV LOW	00:14	00:23	
8/13/98	GD	0.118	29	52	2	NRV LOW	00:08	00:21	
8/13/98	GD	0.118	29	52		NRV LOW	00:28	00:23	
8/14/98	VX	0.055	26	52	2	NRV LOW NRV LOW	00:28	00:23	-
8/14/98	VX	0.055	26	52		NRV LOW NRV LOW	00:08	00:26	
8/14/98	VX	0.055	26	52	1	NRV LOW NRV LOW	00:06	00:26	-
8/14/98	VX	0.055	26	52	2	NRV LOW NRV LOW	00:30	00:20	
8/14/98	VX	0.055	26	52	1	NRV LOW NRV LOW	00:30	00:31	
8/14/98	VX	0.055	26	52	2		00:19	00:50	
8/17/98	HD	2.63	0	0	1	BLS MED	00:07	00:46	
8/17/98	HD	1.93	0	0	2	BLS LOW	00:07	00:47	
8/17/98	HD	1.93	0	0	1	BLS MED		00:47	
8/17/98	HD	1.93	0	0	2	BLS LOW	00:05	00:33	
8/17/98	HD	1.93	0	0	1	BLS LOW	00:05		-
8/17/98	HD	1.93	0	0,	2	BLS LOW	00:04	00:44	

TABLE 5. Summary of Agent Vapor Testing, ERDEC, August 1998

Date	Agent	Conc. (ug/L)	RH	Temp.	Det #	Response	Alarm Time (mm:ss)	Clear Time (mm:ss)	Notes
8/18/98	VX	0.09	0	0	1	NRV LOW	01:27	00:22	
	VX	0.09	0	0	2	NRV LOW	00:37	00:23	_
8/18/98				 	1	NRV LOW	01:38	00:23	9
8/18/98	VX	0.09	0	0	1				
8/18/98	VX	0.07	0	0	2	NRV LOW	00:48	00:22	
	VX	0.07	0	1 0	1	NRV LOW	00:49	00:23	
8/18/98				 	-	NRV LOW	00:14	00:28	
8/18/98	l VX	0.07	0	0	2	NRV LOW	00.14	00.26	<u> </u>

Notes

- 1. GD peaks are present, but just outside the alarm window established by the detection algorithm.
- 2. Cleardown time was not recorded.
- 3. Detector realarmed following cleardown.
- 4. VX concentration uncertain.
- 5. Residual HD peaks observed from previous tests.
- 6. Multiple peaks in the vicinity of the negative reactant ion shown that there is negative-mode contaminant at +52 °C which reduces the sensitivity to HD. Detector also did not respond to the H confidence sample.
- 7. GB peaks are present, but just outside the alarm window established by the detection algorithm.
- 8. Detector alarmed after the agent vapor was removed.
- 9. Detector recalibrated approximately 1 minute into the challenge, and then alarmed immediately afterward.

5. GOVERNMENT TESTING: INTERFERENCES

Two prototype M43-APD detectors were subjected to outdoor interference testing at the ERDEC M-Field test site from 31 Aug to 3 Sep 1998. ETG personnel were present to support testing, perform maintenance and capture detector digital data. Each detector was subjected to three trials of each interference challenge. Time was allowed between each trial for each detector to clear before the next trial. Between each different interference, confidence checks were performed to verify detector operation. On every occasion, both detectors alarmed properly to the confidence sample.

On the first day of testing, the detector operating software had to modified to make the prototype detectors compatible with the new battery box that ERDEC had developed as a replacement for the BA3517/U. The M43-APD has a built-in test feature which checks the remote terminals for a short in the field wire which connects to the M42 remote alarm. The Government's prototype battery box has a feature which sends voltage across the remote terminals when the battery voltage is low. This feature fools ETG's built-in test into thinking that there is a short across remote terminals.

The Government's prototype battery box has a diode-protected circuit which can be used by the M43-APD built-in test. It is a simple hardware fix which requires only that the positive and negative polarity of the M43-APD test signal be reversed to match the polarity of the Government's circuit.

Table 6 summarizes the interference test results. Most test trials resulted in no false alarms. The exceptions are described below.

JP8 fuel vapor caused false alarms in 3 of 6 trials. JP8 produced two peaks, both of which occurred in VX windows and displayed a false alarm. The peak second difference amplitudes (SECD) were not large, but were higher than the VX alarm threshold. The VX peak SECD criteria is quite low to accommodate the required low concentration (0.04 mg/m3) of purified VX. M56 turbine exhaust caused false alarms in 4 of 6 trials. All of these alarms occurred immediately after the turbine was shut off at the end of each trial. Also, M56 exhaust did not produce any peaks until shut down. It was learned that the M56 turbine purges residual JP8 fuel at shut down. Examination of IMS feature data revealed that the peaks produced by the assumed M56 exhaust were in the same positions as for JP8 fuel vapor and caused VX alarms. Thus, the M56 turbine exhaust did not cause false alarms, but the residual JP8 did.

DS2 caused a false alarm in 1 of 6 trials. Two peaks were observed in the positive mode. One had a large amplitude, but was not in any agent window. The second had a small amplitude and was in a GB window. The peak SECD was below the GB alarm criteria in most cases, but occasionally grew to a value slightly above the alarm threshold and caused an alarm.

Yellow smoke false alarmed in 6 of 6 trials HD, L, VX and GB; violet smoke alarmed 3 of 6 times as L; and green smoke alarmed 6 of 6 times as GB. All colored smokes created interference peaks in both the negative and positive detection polarities. Yellow smoke had large peaks in the HD and Lewisite windows as well as large peaks in the GB and VX windows. Violet smoke produced a large peak in the Lewisite window. Green smoke produced a large peak in a GB window. Green smoke had significant effect on the IMS spectrum, causing broad unresolved peaks and sometimes eliminating the positive reactant ion (Rx+) completely.

TABLE 6. Battlefield interference testing of M43-APD, 31 Aug to 3 Sep 1998

INTERFERENCE	DISTANCE (FEET)	FALSE ALARMS / TRIALS	TIME OF EXPOSURE	Notes
			(MIN.)	
GAS EXHAUST	10	0/6	2	
DIESEL EXHAUST	10	0/6	2	
GAS VAPOR	5	0/6	2	
BURNING GAS	15	0/6	3	
DIESEL VAPOR	5	0/6	2	
BURNING DIESEL	15	0/6	2	
KEROSENE VAPOR	5	0/6	2	
BURNING KEROSENE	15	0/6	2	
JP8 FUEL VAPOR	5	3/6	2	VX
JP8 BURNING	15	0/6	2	
BURNING CARDBOARD	15	0/6	2	
BURNING WOOD	35	0/6	2	
DOUSED FIRE	22	0/6	2	
BURNING TIRE	22	0/6	2	
WHITE PHOSPHOROUS	50	0/6	2	
YELLOW SMOKE	50	6/6	2	HD, L, VX, GB
VIOLET SMOKE	50	3/6	2	L
RED SMOKE	50	0/6	2	
GREEN SMOKE	50	6/6	2	GB
HTH	5	0/6	2	
BLEACH	10	0/6	2	
SUPER TROPICAL BLEACH	10	0/6	. 2	
DS2	10	1/6	2	GB
AFFF	10	0/6	2	
BREAKFREE (CLP)	3	0/6	2	
RBC	3	0/6	2	
LSA OIL	3	0/6	2	
INSECT REPELLENT AEROSOL	3	0/6	2	

TABLE 6. Battlefield interference testing of M43-APD, 31 Aug to 3 Sep 1998

INTERFERENCE	DISTANCE (FEET)	FALSE ALARMS / TRIALS	TIME OF EXPOSURE (MIN.)	Notes
INSECT REPELLENT LOTION	3	0/6	2	
INSECTICIDE	3	0/6	2	
M56 TURBINE EXHAUST	25	4/6	2	VX, note 1
M56 FOG OIL SMOKE	50	0/6	2	
M76 GRENADE	20	0/6	5 (SECONDS)	
	T	OTALS		
ALARMS / TRIALS	23/198	11.6%		
MATERIALS CAUSING A	6/33	18.2%		

Notes:

1) Post alarm. False alarm occurred when turbine shut off and JP8 fuel is automatically purged from system. Since this is a false alarm to JP8 vapor, the materials causing alarm becomes 5/33 or 15.2%.

6. TEST INCIDENT REPORTS

During the testing, five test incident reports (TIR) were generated. Detailed discussions are given in the following pages. A summary is provided in Table 7, below.

TABLE 7. Summary of Test Incident Reports.

TIR No.	Description
1	Signal shows excessive peak-to-peak noise during low-temperature operation.
2	Detector did not start up within 30 minutes following hot storage.
3	Detectors do not alarm to GD vapor.
4	Detectors will not alarm to H confidence sample or HD vapor following hot storage.
5	Detectors display Remote Alarm Error when connected to prototype battery boxes.

Program: DAAM01-97-C-0033 M43A1 Upgrade and Feasibility Analysis

Reported by: Glenn Weaver

Equipment: 2428980 M43-APD Chemical Agent Detector

S/N: 980206-4

Date: March 25, 1998

Test Location: ETG Environmental Chamber No. EVC-001

Nature of Operation: Startup at -40°C, following 17 hours of storage at -40°C

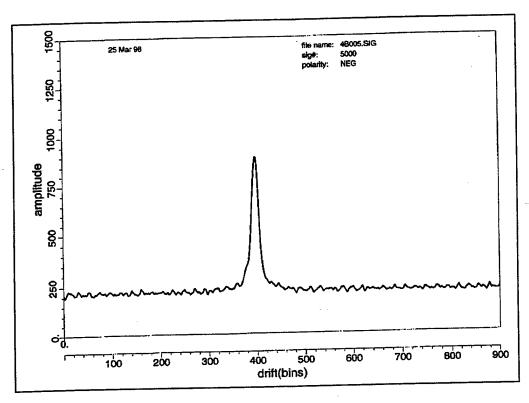
Problem: Signal shows excessive peak-to-peak noise during low-temperature operation.

Discussion: Following low-temperature storage, the detector was started up at -40 °C. The detector successfully started and alarmed to the confidence sample, but the oscilloscope showed a broadband noise which appeared to exceed the acceptance test criteria. The signature plots confirmed this.

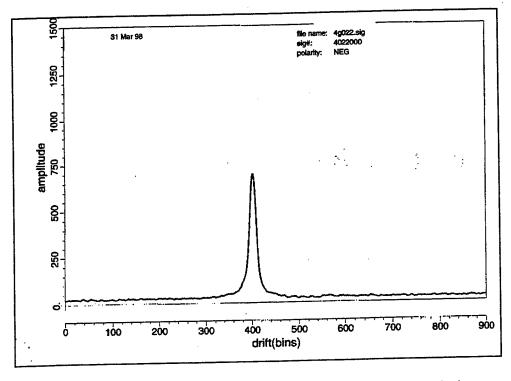
Repair Action: Removed the nickel plating from the inside surface of the casetop in the immediate vicinity of the hole in the casetop where the inlet assembly passes through.

Cause of Problem: The cause of noise was isolated to a ground loop created by contact between the IMS sensor module and the nickel plating of the M43A1 casetop. The contact was occurring at the point where the aluminum inlet housing goes through the case top.

Corrective Action: The short-term solution was to scrape away the nickel plating from around the hole in the casetop where the inlet passes through. Long-term design solutions are to isolate the sensor using an electrically-insulating gasket, or to improve the tolerance stackup so that there is no contact with the nickel plating.



Detector 980206-4, low-temperature storage/operation; signatures taken during operation at -40 °C show excessive broad-band noise.



Detector 980206-4, low-temperature storage/operation; signatures taken during operation at -40 °C following repair. Cause of the noise was isolated to a ground loop due to contact between the IMS sensor and the nickel plating in the casetop

Program: DAAM01-97-C-0033 M43A1 Upgrade and Feasibility Analysis

Reported by: Jeff Siebert

Equipment: 2428980 M43-APD Chemical Agent Detector

S/N: 980206-5

Date: March 31, 1998

Test Location: ETG Environmental Chamber Pool No. 0277

Nature of Operation: Startup at +52°C, following 16 hours of storage at +52°C

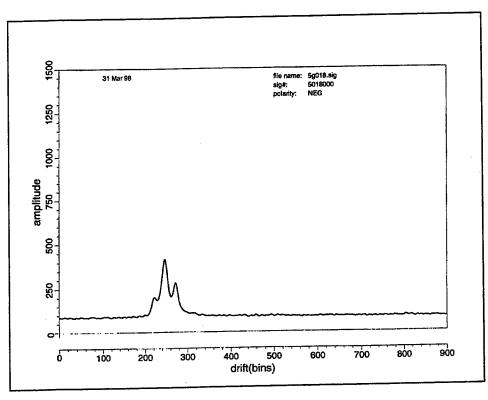
Problem: Detector did not start up within 30 minutes following hot storage.

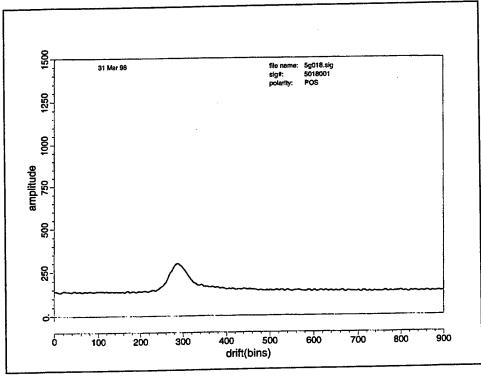
Discussion: Following non-operational storage at +52 °C, the detector was upcapped and power turned on. After 5 minutes in STANDBY, the detector had not normalized and displayed CAL ERR (failure to calibrate). After 30 minutes the detector still had not calibrated and the test was stopped.

Repair Action: Washed and baked all components, added activated charcoal to vents within the sieve pack assembly, replaced the sieve pack assembly due to suspected leak, redesigned the inlet assembly and inlet cap, and lowered the alarm threshold required for H alarm.

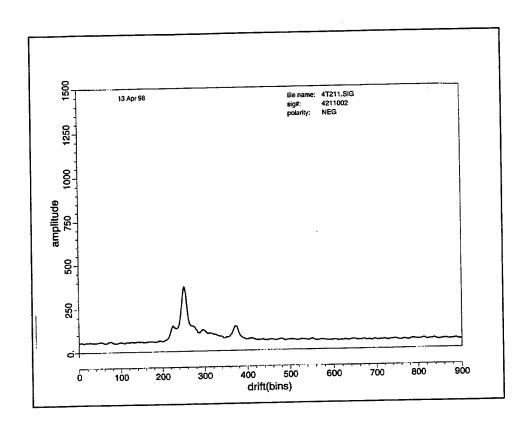
Cause of Problem: The cause of the failed startup was a contaminant in the positive mode which prevented the positive reference ion peak (NH₃) from forming. When a reference ion peak is not present, the detector will not calibrate. In addition, there was a contaminant in the negative mode signature which interferes with formation of both the negative reference peak and subsequently the ability of the H-simulant from forming a well-defined ion peak. As a result, the detector will not alarm to the H confidence sample because the second difference amplitude of the H-simulant peak is below the alarm threshold. The source of the contamination appears to be a material within the M43A1 case assembly which is outgassing at high temperatures. The contaminant probably enters the sensor module through the sieve pack assembly, which uses the vent to equalize pressure between the interior volume of the cell and the case interior.

Corrective Action: The precise source of the contamination has not yet been isolated, and it is unlikely that a single component will be found which is the sole contributor. Regardless of whether the source of contamination is found, there is one design approach to minimize its impact. The current sieve pack vents to the inside of the case, therefore the sieve breather effect is pulling case air into the sensor. The pneumatics can be modified to vent to the outside of the case, probably through the inlet assembly.

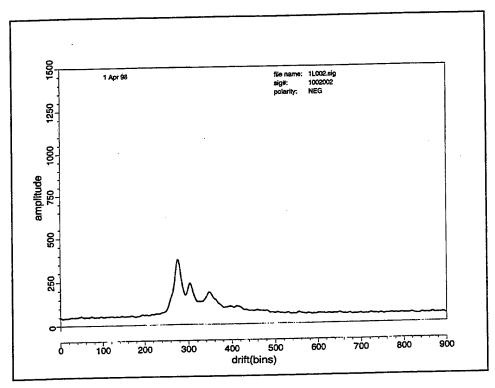


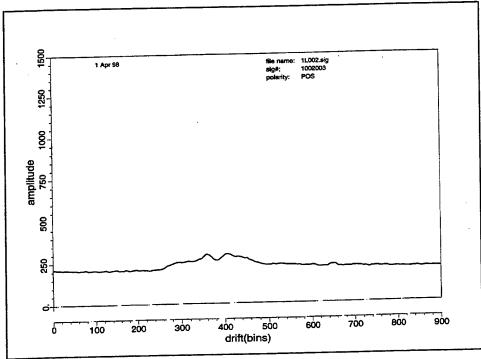


Detector 980206-5, high-temperature storage/operation; signatures taken during backflush at +52 °C, approximately 30 minutes after initial power. Detector was unable to calibrate following storage at +52 °C for 20 hours; the cause is a contaminant in the positive mode which is preventing the NH₃ ion peak from forming.



Detector 980206-4, high-temperature storage/operation; signature of an H confidence sample taken during operation at + 52 °C, 15 minutes after initial power on following 90 hours of storage at +52 °C. Detector does not alarm to the H confidence sample because the second difference amplitude of the H-simulant ion peak is SECD=266, which is below the alarm threshold of SECD=500.





Signatures of an air sample drawn from the interior of detector 980206-5 after the detector had been stored at +52 °C for 16 hours. Sample was acquired by attaching a 1-ft Viton tube to the inlet of detector 980206-1, just cracking open detector case, and inserting the Viton tube inside the case. Long startup times are being caused by contaminants which build up inside the M43A1 cases at high temperatures and are working their way inside the IMS closed loop system.

Program: DAAM01-97-C-0033 M43A1 Upgrade and Feasibility Analysis

Reported by: George Lozos

Equipment: 2428980 M43-APD Chemical Agent Detector

S/N(s): 980206-4 and 980206-5

Date: Aug 3, 1998

Test Location: ERDEC Surety Lab Building E3510

Nature of Operation: Agent vapor testing at room temperature

Problem:. Detectors do not alarm to GD vapor

Discussion: On the first day of agent vapor testing, the detectors did not alarm to GD at

ambient lab temperature (+20 °C).

Repair Action: No repairs were made.

Cause of Problem: GD agent vapor produced strong peaks in the IMS signature, indicating good sensitivity. However, the position of the peak was not within the alarm criteria for GD as defined by the agent detection algorithm. The positions for all IMS peaks (reactant ion reference and agent) were at longer drift times than normal (to the right). This caused the peak location ratios (PLRs) to be smaller than normal (to the left).

Corrective Action: These no-alarm conditions could be improved by modifying the GD peak position criteria, but the improved agent detection may come at the expense of increased false alarms. Evaluation of interference materials with peaks in this region showed a potential for false alarms. One possibility is that replacing the sieve pack with newly charged one would restore the peak drift times and ratios to their normal values. Any hardware evaluation would require additional effort to isolate the cause of this observation.

Program: DAAM01-97-C-0033 M43A1 Upgrade and Feasibility Analysis

Reported by: Glenn Weaver

Equipment: 2428980 M43-APD Chemical Agent Detector

S/N(s): 980206-4 and 980206-5

Date: Aug 10, 1998

Test Location: ERDEC Surety Lab Building E3510

Nature of Operation: Hot-temperature startup following storage at +52 °C

Problem:. Detectors will not alarm to H confidence sample or HD vapor following hot

storage.

Discussion: Detectors had been shutdown at ambient room temperature for 40 hours following VX vapor testing, also at ambient room temperature. At 7:30 am the test crew ramped the environmental chamber to +52 °C with detectors in shutdown state. Detectors were powered on after 2 hours of storage. Detectors were able to calibrate and successfully alarm to the G confidence sample, but did not alarm to the H-confidence sample or the HD vapor at 2.0 ug/L.

Repair Action: None. When detectors were removed from the chamber, the signatures immediately cleaned up and the detectors alarmed to the H confidence sample.

Cause of Problem: This problem was first observed during design verification testing at ETG (see TIR #2), but the symptoms were not as pronounced during DVT as they were during agent testing. At ETG, the detectors were stored for 96 hours at +52 °C and were able to alarm to confidence sample. There is a contaminant in the negative mode signature which interferes with formation of both the negative reference peak and subsequently the ability of the H-simulant and HD vapor from forming a well-defined ion peak. As a result, the detector will not alarm to either sample because the second difference amplitude of the H-simulant peak is below the alarm threshold. The source of the contamination appears to be a material within the M43A1 case assembly which is outgassing at high temperatures. The contaminant probably enters the sensor module through the sieve pack assembly, which uses a vent to equalize pressure between the interior volume of the cell and the case interior.

Corrective Action: The precise source of the contamination has not yet been isolated, and it is unlikely that a single component will be found which is the sole contributor. Regardless of whether the source of contamination is found, there is one design approach to minimize its impact. The current sieve pack vents to the inside of the case, therefore the sieve breather effect is pulling case air into the sensor. The pneumatics can be modified to vent to the outside of the case, probably through the inlet assembly

Program: DAAM01-97-C-0033 M43A1 Upgrade and Feasibility Analysis

Reported by: Glenn Weaver

Equipment: 2428980 M43-APD Chemical Agent Detector

S/N(s): 980206-4 and 980206-5

Date: Aug 3, 1998

Test Location: ERDEC M-Field

Nature of Operation: Operation with Government prototype battery boxes

Problem: Detectors display Remote Alarm Error when connected to prototype battery

boxes.

Discussion: ERDEC has developed a new battery box as a replacement for the BA3517/U. When the detectors were connected to the new batteries, the built-in test detected a short across the remote terminals and subsequently displayed the error message. When connected to the original BA3517/U, the detectors do not display this error.

Repair Action: Downloaded new software version M502d, which disables the built-in test for a short across the remote terminals.

Cause of Problem: The Government's new battery has a feature which sends voltage across the remote terminals when the battery voltage is low. This feature fools ETG's built-in test into thinking that there is a short across the remote terminals.

Corrective Action: The Government's new battery box has a diode-protected circuit which can be used by the M43-APD built-in test. It is a simple hardware fix which requires only that the positive and negative polarity of the M43-APD test signal be reversed to match the polarity of the Government's circuit.

7. CONCLUSIONS

Over a six-month period of testing the prototype M43-APD Chemical Agent Detector, the results have been very favorable. The main objective in this feasibility study was to demonstrate that ETG's IMS-based sensor module and agent-detection algorithm can be successfully integrated into the M43A1 detector. This objective has been met. The ICAM cell, APD electronics, power supplies, display, sieve pack, manifold, and communication ports were each successfully repackaged to fit within the M43A1 case assembly. The design is essentially complete and is ready for transition to production; M43A1 detectors can be refurbished economically and in large quantities. The M43-APD operator interface has been simplified to require only two steps; plug in the power and perform a confidence test.

There were no hardware (pumps, cell, electronics) failures reported for any components during either the design verification testing or the Government evaluation testing. On each day during the Government's testing, the M43-APD detectors were ready to go, which is a reflection of the maturity of ETG's APD sensor technology. From this aspect the M43-APD design should be considered a low risk.

Testing also showed that our agent-detection algorithm, which has been tested on numerous occasions by the Government, is directly transferable from the ICAM-APD to the M43-APD. Again this is a reflection of the maturity of the proposed upgrade.

Despite the overall success of the detectors during this test program, there were two problems encountered during agent-vapor testing which require some discussion. First, the detectors did not alarm to GD vapor at ambient lab temperature (+20 °C). ETG's analysis of this problem showed that the GD agent vapor was producing strong peaks in the IMS signature, indicating good sensitivity. The position of the peaks, however, was outside of the alarm windows that are defined by the agent detection algorithm. These no-alarm conditions can be improved with modification to the detection algorithm, but the improved agent detection may come at the expense of increased false alarms.

From our past experience, we know that insect repellents produce IMS peaks in the vicinity of the GD peaks, and that expanding the alarm windows for GD may produce false alarms to insect repellents. With this in mind, ETG used laptop computers during M-Field testing to collect IMS signatures of the various materials, including insect repellents, in order to make a quantitative evaluation of the impact of widening the GD alarm windows. The data showed that the insect repellents produce peaks close to the GD windows, but none had amplitudes which would have produced an alarm, even if the GD windows are widened to the point where GD would have produced alarms in the agent vapor tests.

Also during agent-vapor testing, the M43-APD detectors did not alarm to HD at an elevated temperature of +52 °C. The signature data taken during these tests shows that there is a contaminant in the negative-mode signature that is impeding the formation of a

strong reactant ion, with a corresponding reduction in the sensitivity to HD. ETG can not be sure, but we believe that this contaminant is a material which is outgassing from the M43A1 case assemblies. The contaminant peaks disappeared almost immediately after the detectors were removed from the environmental chambers and returned to room temperature. It is important to note that the contaminant does not affect blister-agent detection at lower temperatures and that nerve-agent detection is not affected.

During the first day of M-Field testing, the air temperature was 90 °F and the detectors were operated in the full sun. The internal temperature of the detector is continuously monitored by the operating software; the test data from M-Field measured the internal temperature at +48 °C, which is only 6 °C lower than the internal temperature measured during the HD testing. The M-Field test signatures do not show the negative-mode contaminant and they responded to the confidence samples 100% of the time. In other words, the contaminant is only affecting operation in the extreme high-temperature conditions.

The contamination is an important failure which ETG has taken very seriously. The precise source of the contamination has not yet been isolated, and it is unlikely that a single component will be found which is the sole contributor. Regardless of whether the source of contamination is found, there is one design approach to minimize its impact. The current sieve pack vents to the inside of the case, therefore the sieve-breather effect pulls case air into the sensor. The pneumatics can be modified to vent to the outside of the case, probably through the inlet assembly.

Blank

APPENDIX A. ETG DESIGN VERIFICATION TEST DATA

Blank

Detector S/N	980206-4	Date: _	3-24-98	
Software Ver	502-1	Time: _	18:00	, d. C
Location:	CAM CLEANROOM			
1. Initial Pov	ver On			
A.	Uncap the air inlet and air exh	aust. Pla	ace charcoal filter	over the inlet.
B.	Connect communication cable	and beg	in "Logall" file.	4A001. DAT
C.	Turn horn volume to full (clos	ckwise)		
D.	Connect power and begin stop	watch.		
E.	Verify startup sequence.			
			Pass	Fail
Display show	vs M43-APD			
Display show	vs the Software Version			
Display show	vs LED TEST followed by test p	oatterns		
Display show	ws HORNTEST and horn beeps	twice		
Display show	vs SELFTEST		<u> </u>	
Display show	ws STANDBY and backflush be	gins		
Display show	ws READY within 30 minutes a	fter start	up <u> </u>	
Reco	rd Time 2:39			
Display goes	s blank approx. 15 seconds after	READY	<u> </u>	
Tosted by:	M		Date	3-24-98

Detector S/N 980206 - 4 Date:	3-24-96
Software Ver So2 - I Time	:18:05
Location: CAM CLEANROOM	
1. Connect communications cable and begin "Log	gall"
A. Record datafile name 4A 00) (Attach copy of data with test record	
,	4A002.316 F-AIR
B. Use menu to turn on display (option	mai) — H / 3
2. "H" Simulant Test	(G 1s
C. Alarm response	<u>Pass</u> <u>Fail</u>
Challenge Time sec	N/A
Time to Alarm 4 sec	N/A
Horn Sounds	
Display correctly identifies Blister (No	te 1)
Record response(s) BLST MED	
NERV ME	
Cleardown less than 5 minutes after ala Record cleardown time 50 sec	
Note 1 Detector must alarm either BI	LS or BLS/NRV
3. "G" Simulant Test	
D. Alarm response	Pass Fail
Challenge Time sec	N/A
Time to Alarm sec	N/A
Horn Sounds	
Display correctly identifies Nerve (Note	e 2)
Record response(s) NERV Low	
BLST LOW	
Cleardown less than 5 minutes after ala	
Record cleardown time 37 SEC	
Note 2 Detector must alarm either NI	RV or NRV/BLS
Tested by:	Date 3-24-98

H/G Simulant Test Data Sheet

Detector S/N 980206-3	Date:	3-24-98	·
Software Ver. 502-1	Time: _	18:05 18:	15
Location: CAM CLEANRO	6M	3-24-99	
1. Connect communications cab	le and begin "Logall		
A. Record datafile name		Γ	
(Attach copy of data with	test records)	4A003.51	& F-AIR
B. Use menu to turn on displ	lay (optional)		& F-AIR H 10 S
2. "H" Simulant Test			G 10s
C. Challenge detector for 10	seconds using CAN		
D. Alarm response		<u>Pass</u>	<u>Fail</u>
Challenge Time 3 Time to Alarm 25 Horn Sounds	sec	N/A	
Time to Alarm		N/A	
Display correctly identified			
Record response(s)	15251 COW		
Cleardown less than 5 mi	 nutes after alarm		
Record cleardown time			**************************************
Note 1 Detector must alarm			
Note I Detector must alari	in enner DLS of DL	3/1 11 C 4	
3. "G" Simulant Test			
E. Challenge detector for 10	seconds using CAN	M "H" Simulant genera	ator (7 bars)
E 41		Pass	Fail
F. Alarm response	200	N/A	ran
Challenge Time 4 Time to Alarm 4		N/A	
Horn Sounds	sec	14/14	
Display correctly identific	es Nerve (Note 2)		
Record response(s)	•		
Record response(s)	7.0.00 (12)		
Cleardown less than 5 mi Record cleardown time			
Note 2 Detector mu		or NRV/BLS	
11			
Tested by:		Date3_	24-98
/			

Form M43-DVT-003

Rev 0 (March 24, 1998)

Detector S/N 980206 - 4

Date: 3-25-98

Software Ver. <u>5.02A-1</u> Time: <u>12:10:19</u>

Location: EVC - 001 STARTUP @ -40°C

1. Initial Power On

- Uncap the air inlet and air exhaust. Place charcoal filter over the inlet. A.
- Connect communication cable and begin "Logall" file. 48004.DAT B.
- Turn horn volume to full (clockwise) C.
- Connect power and begin stopwatch. D.
- Verify startup sequence. E.

	Pass	Fail
Display shows M43-APD	<u> </u>	
Display shows the Software Version	<u> </u>	
Display shows LED TEST followed by test patterns	<u> </u>	
Display shows HORNTEST and horn beeps twice	<u> </u>	<u></u>
Display shows SELFTEST	<u> </u>	
Display shows STANDBY and backflush begins	$\sqrt{}$	
Display shows READY within 30 minutes after startup		
Record Time /3:35		
Display goes blank approx. 15 seconds after READY	$\overline{\checkmark}$	

Date

Detector S	N 980206-4	Date:	3-2	5-98	<u>, </u>
Software V	Ver. <u>5.02 A - 1</u>	Time:			
Location:	EVC-001		STARTE	AP @	-40°C
1. Connec	t communications cable and b	egin "Loga	II"		
A.	Record datafile name (Attach copy of data with	4B004 test records	. <i>DAT</i> s)		
B.	Use menu to turn on disp	lay (optiona	al)		
2. "H" Sin	nulant Test				
C.	Alarm response Challenge Timeiser Time to Alarm ser Horn Sounds Display correctly identifies B Record response(s)	c Hister (Note		Pass N/A N/A	<u>Fail</u>
	Cleardown less than 5 minute Record cleardown time		-		
	Note 1 Detector must alarm	n either BL	or BLS/IN	ΚV	
3. "G" Sin	nulant Test				
D.	Alarm response Challenge Timese Time to Alarmse Horn Sounds Display correctly identifies N Record response(s)Na	c Jerve (Note		Pass N/A N/A	Fail
	Cleardown less than 5 minute Record cleardown time		m	<u></u>	
	Note 2 Detector must alarm		– .V or NRV/	BLS	
Tested by:	Gle ES ESea	7 —	Date		3-25-99

*	Detector S/N 980206-4 Date: 3-	25-98
	Software Ver	28
	Location: EVC - 001	
5143 1008.514 F-MA	1. Connect communications cable and begin "Logall" A. Record datafile name 4007. DAT (Attach copy of data with test records) B. Use menu to turn on display (optional) 2. "H" Simulant Test	DETECTOR IS ALARMING NERVE LOW - INTERMITIENT W/ FILTER ON.
K	C. Alarm response Challenge Time	Pass Fail N/A N/A
	Cleardown less than 5 minutes after alarm Record cleardown time //30" Note 1 - Detector must alarm either BLS or BLS/N	VRV
	3. "G" Simulant Test	
	D. Alarm response Challenge Time	Pass Fail N/A N/A
	Cleardown less than 5 minutes after alarm Record cleardown time 0:50	
	Note 2 Detector must alarm either NRV or NRV	BLS 3-25-98

Detector S/N	980206-4	Date:	3-26-98	
Software Ver	5.0ZA-1	Time:	13:15	
	EVC-001			
1. Connect of	communications cable and begin	n "Logall"		
A.	Record datafile name4 (Attach copy of data with test	t records)	<u> </u>	
В.	Use menu to turn on display	(optional)		
2. "H" Simu	lant Test			
C	larm response Challenge Timesec		<u>Pass</u> N/A N/A	<u>Fail</u>
H	forn Sounds Display correctly identifies Blist	er (Note 1)	<u> </u>	
D	Record response(s) BLS	MED		
C	Cleardown less than 5 minutes a Record cleardown time	ifter alarm	<u> </u>	
N	lote 1 Detector must alarm ei	ither BLS or BI	LS/NRV	
3. "G" Simu	ılant Test			
C	Challenge Time sec Cime to Alarm sec Horn Sounds		Pass N/A N/A	Fail
	Display correctly identifies Ner Record response(s) NRV	ve (Note 2)	<u> </u>	
	Cleardown less than 5 minutes a Record cleardown time	30		
ľ	Note 2 Detector must alarm e	ither NRV or N	NRV/BLS	
Tested by: _	<u>A.</u>	Date	3-2	6-98

Detector S/N	980206-4	Date:3	-27-98	·
Software Ver.	5.02A-1	Time:	9:15 Am	
Location:C	CAM CLEAN ROOM			
1. Initial Powe	er On			
A.	Uncap the air inlet and air ex	thaust. Place cl	harcoal filter ov	er the inlet.
В.	Connect communication cab	le and begin "L	ogall" file.	4EBOOIS. DAT
C.	Turn horn volume to full (clo	ockwise)		
D.	Connect power and begin sto	pwatch.		
E.	Verify startup sequence.			
			Pass	Fail
Display show	s M43-APD		<u>~</u>	
_	s the Software Version			
=	s LED TEST followed by test	patterns		-
-	s HORNTEST and horn beeps			
Display show			<u>/</u>	
Display show	s STANDBY and backflush b	egins		
Display show	s READY within 30 minutes	after startup		
Recor	d Time 2:39			
Display goes	blank approx. 15 seconds afte	r READY	<u> </u>	
Tested by:	Mle Wear		Date	3-27-98

Detector S/	N 980206-4	Date: _	3-27-	98	
Software V	er. 2.5.02A-1	Time: _	9:1	8	
Location:	CAM CLEAN ROE	~			
1. Connec	t communications cable and begin	n "Logall	»,		
A.	Record datafile name(Attach copy of data with test	et records)	15 4E	015.D	AT
B.	Use menu to turn on display	(optional))		
2. "H" Sin	nulant Test				
	Alarm response Challenge Time/sec Time to Alarmsec Horn Sounds Display correctly identifies Blis Record response(s)	LOW MED after alarm 8 SEC	1)	Pass N/A N/A	Fail
- "0" 6'	Note 1 Detector must alarm e	imer blo	Of BLS/NK	. v	
	Alarm response Challenge Time/sec Time to Alarm sec Horn Sounds Display correctly identifies Ner Record response(s)			Pass N/A N/A	Fail
	Cleardown less than 5 minutes Record cleardown time	after aları 21386	m 		
	Note 2 Detector must alarm	either NR	V or NRV/E	BLS	
Tested by	Mle W Weng		Date	3-2	27-98

Detector S/N	980206-4	Date:	-30-98	
Software Ver.	5.02A-1	Time:	15:15	
Location: <u>C</u>	AM CLEAN ROOM			
1. Initial Pow	er On			
A.	Uncap the air inlet and air ex	haust. Place	charcoal filter	over the inlet.
B.	Connect communication cab	le and begin "	Logall" file.	4F017.DAT
C.	Turn horn volume to full (cle	ockwise)		
D.	Connect power and begin sto	pwatch.		
E.	Verify startup sequence.			
			Pass	Fail
Display show	s M43-APD			
_	s the Software Version			
	s LED TEST followed by test	patterns	<u>~</u>	
Display show	s HORNTEST and horn beep	s twice		
Display show	s SELFTEST			
Display show	s STANDBY and backflush b	egins	<u>~</u>	
Display show	rs READY within 30 minutes	after startup		
	d Time 2:38			
Display goes	blank approx. 15 seconds afte	r READY		
Tested by:	It Weary		Date	3/30/98

Detector S/N 980206 - 4	Date: _	3 - 30	-98	
Software Ver 5. 62 A - 1	Time: _	15:20	<u> </u>	
Location: <u>CAM CLEAN ROOM</u>				•
1. Connect communications cable and begin				
A. Record datafile name				
B. Use menu to turn on display	(optional))		
2. "H" Simulant Test				
C. Alarm response			<u>Pass</u>	<u>Fail</u>
Challenge Time/sec			N/A	
Time to Alarm3sec			N/A	
Horn Sounds			<u></u>	
Display correctly identifies Blist	er (Note 1	l)		
Record response(s)				
	MEI			
Cleardown less than 5 minutes a Record cleardown time/			<u> </u>	
Note 1 Detector must alarm ei	ther BLS	or BLS/NR	V	
3. "G" Simulant Test				
D. Alassa aremenee			Pass	Fail
D. Alarm response Challenge Time/sec			N/A	
Time to Alarm 3 sec			N/A	
Horn Sounds			~	
Display correctly identifies Nerv	ve (Note 2	.)	/	
Record response(s) NKV BLS	ME! Lou) J		
Cleardown less than 5 minutes a Record cleardown time	ifter alarm	1		
Note 2 - Detector must alarm ei	ither NRV	or NRV/B	SLS	
Tested by: Mary	_ I	Date	3/30/	98

H/G Simulant Test Data Sheet

Detector S/N 980206 - 4	Date:3 -	30-98	
Software Ver. 5.02A - 1	Time: 3	= 15:30	>
Location: CAM CLEAN ROOM			
Connect communications cable and begin	n "Logall"	5163.	
A. Record datafile name 4FOIE. (Attach copy of data with test record			
B. Use menu to turn on display (options	al)		
2. "H" Simulant Test			
C. Challenge detector for 10 seconds u	sing CAM "H" Si	imulant genera	ntor (7 bars)
D. Alarm response		<u>Pass</u>	<u>Fail</u>
Challenge Time sec		N/A	
Time to Alarm sec		N/A	
Horn Sounds	•		
Display correctly identifies Blister (1	Note 1)		
Record response(s) BLS M			
Cleardown less than 5 minutes after a Record cleardown time			
Note 1 Detector must alarm either BI	S or BLS/NRV		
3. "G" Simulant Test			
E. Challenge detector for 10 seconds us	sing CAM "H" Si	imulant genera	tor (7 bars)
F. Alarm response		Pass	Fail
Challenge Timesec		N/A	
Time to Alarm sec		N/A	
Horn Sounds			
Display correctly identifies Nerve (N	lote 2)		
Record response(s) NRV LL			
Cleardown less than 5 minutes after a Record cleardown time	alarm ———	~	
Note 2 Detector must alarm eit	her NRV or NRV	/BLS	
Tested by: Me hoary	Date	3-3	0-98
-			

	•			
Detector S/N	980206-4	Date:	3/31/98	
Software Ver	5.02A-1	Time:	8:38	
Location:	EVC - 001	_9	touc	
1. Initial Pow	er On			
A.	Uncap the air inlet and a	air exhaust. Pl	ace charcoal filter	over the inlet.
B.	Connect communication	n cable and beg	gin "Logall" file.	46021.DAT
C.	Turn horn volume to ful	l (clockwise)		
D.	Connect power and begin	n stopwatch.		
E.	Verify startup sequence.			
			Pass	Fail
Display shows	s M43-APD		<u> </u>	
Display shows	s the Software Version		<u>/</u>	****
Display shows	s LED TEST followed by	test patterns		
Display shows	s HORNTEST and hom b	eeps twice		
Display shows	S SELFTEST		<u>\(\frac{}{} \)</u>	
Display shows	STANDBY and backflu	sh begins	$\overline{}$	
Display shows	s READY within 30 minu	ites after startu	mp <u>√</u>	
Record	1 Time		_ ,	
Display goes b	olank approx. 15 seconds	after READY		
	N ha			1/7/158

Detector S	N 980206 -4	Date:	3/31/98	· · · · · · · · · · · · · · · ·
Software \	/er. <u>5.024</u> -1	Time:	8:58	
Location:	EVC-001		-4000	
1. Connec	t communications cable and	begin "Logall"		
A.	Record datafile name _ (Attach copy of data wi	-	<u> </u>	
В.	Use menu to turn on dis	play (optional)		
2. "H" Sin	nulant Test	·		
C.	Alarm response Challenge Time 2 s Time to Alarm 6 s Horn Sounds Display correctly identifies Record response(s) 181	Blister (Note 1)	Pass N/A N/A 	<u>Fail</u>
	Cleardown less than 5 minu Record cleardown time			
	Note 1 - Detector must alar	m either BLS or	BLS/NRV	
3. "G" Sin	nulant Test			
D.			Pass N/A N/A	Fail
	Cleardown less than 5 minu Record cleardown time	0:47	MDV/BLS	-
Tested by:	Note 2 Detector must alar	Dat	7/2	1/98

Detector S/N 980206 - 04	Date:	3-31-98	
Software Ver. <u>5.02 A - 1</u>	Time:	16:30	
Location: EVC-001			
1. Connect communications cable and begin	in "Logall"		
A. Record datafile name 4/2 (Attach copy of data with test		<i></i>	
B. Use menu to turn on display	(optional)		
2. "H" Simulant Test			
C. Alarm response Challenge Time 1 sec Time to Alarm 5 sec		<u>Pass</u> N/A N/A	<u>Fail</u>
Time to Alarm sec Horn Sounds		1V/A	
Display correctly identifies Blist Record response(s) 823			
Cleardown less than 5 minutes a Record cleardown time o: 3			
Note 1 - Detector must alarm ei	ither BLS or E	BLS/NRV	
3. "G" Simulant Test			
D. Alarm response Challenge Time/ sec		Pass N/A	Fail
Time to Alarm4sec Horn Sounds		N/A	
Display correctly identifies Nerv Record response(s)			
Cleardown less than 5 minutes a Record cleardown time			
Note 2 - Detector must alarm e	ither NRV or	NRV/BLS	
Tested by:	Date	3-3/	-98

Detector S	N 980206-4 Date):	4-1-	78	
Software \	Ver. <u>5.02A-1</u> Tim	e:	8:35	_	
Location:	EVC-001				
1	+	anll"			
I. Connec	et communications cable and begin "Lo		7		
A.	Record datafile name 4/K (Attach copy of data with test reco		, <u>JA I</u>	_	
В.	Use menu to turn on display (option	onal)			
2. "H" Sir	nulant Test				
. C.	Alarm response			Pass Pass	<u>Fail</u>
	Challenge Time sec			N/A	
	Time to Alarm sec		•	N/A	
	Horn Sounds				
	Display correctly identifies Blister (No	ote 1)			
	Record response(s) NRV LO				
	BLS MO			. /	
	Cleardown less than 5 minutes after al Record cleardown timeO.:3 &		•		
	Note 1 - Detector must alarm either B	LS or	BLS/NR\	I	
3. "G" Sir	nulant Test				
ח	Alarm response			Pass	Fail
D.	Challenge Timesec			N/A	
	Time to Alarm3sec			N/A	
	Horn Sounds				
	Display correctly identifies Nerve (No	te 2)		<u>'</u>	
	Record response(s) NRV LO	W			
	Cleardown less than 5 minutes after al	arm			
•	Record cleardown timeO .' 2_3	3			
	Note 2 Detector must alarm either N	IRV of	NRV/BI	LS	
Tested by:	Meany	Da	te	4-1	<u>-98</u>

	N 980206-4		4-1-9	8	
Software V	er. <u>5.02A-1</u>	Time:	15:0	0	
Location:	CAM CLEAN ROOM		Fo	rrowIN&	LOW-TEMP
1. Connect	communications cable and begi	n "Logall"		TESTI	v
A.	Record datafile name 4/2 (Attach copy of data with test		DAT		5 15:10
B.	Use menu to turn on display	(optional)			R-AIR H
2. "H" Sim	nulant Test				4
C	Alarm response		<u>F</u>	ass	<u>Fail</u>
!	Challenge Time/_sec		1	N/A	
	Time to Alarm7sec		1	N/A	
	Horn Sounds		-	<u> </u>	
	Display correctly identifies Blist	er (Note 1)	_	<u> </u>	
	Record response(s) BLS				
,	Cleardown less than 5 minutes a Record cleardown time		-	<u>/</u>	
	Note 1 – Detector must alarm ei	ther BLS or	BLS/NRV	•	
3. "G" Sim	nulant Test				
D	Alarm response		1	Pass	Fail
	Challenge Time sec		1	N/A	
	Time to Alarm3sec		1	N/A	
	Horn Sounds		_	<u> </u>	
	Display correctly identifies Nerv	re (Note 2)	_	<u> </u>	
	Record response(s)				
•	Cleardown less than 5 minutes a Record cleardown time	:200		s	
Tested by:	Il Wears	_ Da	ate	4-1-	98

Detector S/N	980206-4	Date:	5-22-98	
	5.028-1	Time:	16:17	
Location: _	CAM CLEAN			
1. Initial Pow	er On			
A.	Uncap the air inlet and air	exhaust. Place	e charcoal filter o	over the inlet.
В.	Connect communication of			
•	Record datafile name(Attach copy of data with	test records)	. DAT	
C.	Turn horn volume to full	(clockwise)		
D.	Connect power and begin	stopwatch.		
E.	Verify startup sequence.		,	
	·		Pass	Fail
Display show	s M43-APD		<u>~</u>	-
Display show	s the Software Version			
Display show	s LED TEST followed by t	test patterns		
Display show	s HORNTEST and horn be	eps twice	<u></u>	
-	s SELFTEST		<u>/</u>	
- -	s STANDBY and backflus		_	-
Display show	rs READY within 30 minut	tes after startup		
	d Time		_	
Display goes	blank approx. 15 seconds a	after READY		
	•			
Tested by:	H Weaver		Date	5.22-98

Detector S/N 980206 - 4	Date: 5-22-98
Software Ver5.02.A - 1	Time:

Location: CAM CLEAN

- 1. Connect communications cable and begin "Logall"
 - A. Record datafile name 4_0522 A. DAT

 (Attach copy of data with test records)
 - B. Use menu to turn on display (optional)

2. "H" Simulant Test

Startup testing only: elapsed time since power on (min)	5		
Challenge time (sec)	/		
Time to alarm (sec)	4		
Horn sounds	Passy Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister	Pass)/ Fail	Pass / Fail	Pass / Fail
(Note 1)			
Record response(s)	NRV L M H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	Pass/ Fail 0:49	Pass / Fail	Pass / Fail
Record cleardown time	2 77 60		

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

Startup testing only: elapsed time since power on (min)	7		
Challenge time (sec)	1		
Time to alarm (sec)	8		D /D 1
Horn sounds	Pass Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister (Note 1)	Pass) Fail	Pass / Fail	Pass / Fail
Record response(s)	NRVL)M H BLS L M H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	Pass/ Fail	Pass / Fail	Pass / Fail
Record cleardown time	0:35		<u> </u>

Note 2 -- Detector must alarm either NRV or NRV/BLS

Form M43-DVT-002

Rev A (May 19, 1998)

H/G Simulant Test Data Sheet

Detector S/N	980206-4		5-22-98	
Software Ver.	S.02B-1	Time:	16:28	
Location:	CAM CLEAN			
1. Connect con	nmunications cable and beg	in "Logall"		
A. Record	datafile name	1.		
	copy of data with test recor			
B. Use me	nu to turn on display (option	nal)		
2. "H" Simular	nt Test			•
C Challer	nge detector for 10 seconds	using CAM '	"H" Simulant genera	tor (7 bars)
D. Alarm r			Pass	<u>Fail</u>
Challen	ge Time 3 sec		N/A	
	Alarm 3 sec		N/A	
Horn So		(Nieto 1)		
	correctly identifies Blister			
Reco	rd response(s)			
Cleardo	own less than 5 minutes after	r alarm		
	ord cleardown time :			
	Detector must alarm either l		NRV	
3. "G" Simula	nt Test			
E. Challe	nge detector for 10 seconds	using CAM	"H" Simulant genera	ator (7 bars)
F. Alarm	resnonse		Pass	Fail
	nge Time3sec		N/A	
Time to	Alarm 3 sec		N/A	
Horn S	ounds			
	correctly identifies Nerve			
Reco	ord response(s) <u>BL3 L0</u>	<u></u>		
		NED_	1	
	own less than 5 minutes after			
Reco	ord cleardown timeo:	3/		
Note 2	Detector must alarm eith	er NRV or N	RV/BLS	
Tested by:	Hen Eleans	Da		22-98

Form M43-DVT-003

Rev A (May 19, 1998)

Detector S/N	<u>980206-4</u> Dat	:e: <u> </u>	-26-98	-4-12-T-
Software Ver.	5,02 <i>B-1</i> Tin	ne:	9:57	
Location:	VC POOL 0277			
1. Initial Powe	er On			
A.	Uncap the air inlet and air exhaus	t. Place ch	arcoal filter ov	ver the inlet.
В.	Connect communication cable an	d begin "Lo	ogall" file.	
·	Record datafile name 4_05 (Attach copy of data with test rec	26A,D/ ords)	1. T	
C.	Turn horn volume to full (clockw	rise)		
D.	Connect power and begin stopwa	itch.		
E.	Verify startup sequence.			
			Pass	Fail
Display show	s M43-APD		~	
Display show	s the Software Version		<u> </u>	
Display show	s LED TEST followed by test patt	erns		
Display show	s HORNTEST and horn beeps twi	ce		<u> </u>
Display show	s SELFTEST		/ /	
Display show	s STANDBY and backflush begin	ıs		
Display show	s READY within 30 minutes after	startup		
Recor	d Time <u>2′37</u>			
Display goes	blank approx. 15 seconds after RF	EADY		
Tested by:	Me W Wenn	7_	Date	5-26-98

Detector S/N	980206-4	Date:	5-26-98
Software Ver.	5.02B-1	Time:	8:57

- 1. Connect communications cable and begin "Logall"
 - A. Record datafile name 4-0526A.DAT

 (Attach copy of data with test records)
 - B. Use menu to turn on display (optional)

2. "H" Simulant Test

Startup testing only: elapsed time since power on (min)	5'	12'	20'
Challenge time (sec)	4"	4"	4"
Time to alarm (sec)			4"
Horn sounds	Pass / Fail	Pass / Fail	Pass/ Fail
Display correctly identifies Blister	Pass / Fail	Pass / Fail	Pass/ Fail
(Note 1)			
Record response(s)	NRV L M H BLS L M H	NRV L M H BLS L M H	NRV L M H
Cleardown less than 5 minutes after alarm (mm:ss)	Pass / Fail	Pass / Fail	Pass/ Fail
Record cleardown time	77.00		20"

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

Startup testing only: elapsed time	0/		
since power on (min)	7		
Challenge time (sec)	1"		
Time to alarm (sec)	6"		
Horn sounds	Pass / Fail	Pass / Fail	Pass / Fail
Display correctly identifies Nerv	e Pass/Fail	Pass / Fail	Pass / Fail
(Note 1)			
Record response(s)	NRY L M H	NRV L M H	NRV L M H
(coold lospoime(s)	BLS L M H	BLS L M H	BLS L M H
Cleardown less than 5 minutes	Pass/Fail	Pass / Fail	Pass / Fail
after alarm (mm:ss)			
Record cleardown time	0:19"		
100014 0104 000	11 NDX - NDX	/DT C	

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: Me Total Date 5-26-98

Detector S/N	980206-4	Date:5 ⁻ - 26- 98
Software Ver.	5.028-1	Time:13:16

Location: EVC Pool 0277

- 1. Connect communications cable and begin "Logall"
 - A. Record datafile name 4_0526 D. DAT

 (Attach copy of data with test records)
 - B. Use menu to turn on display (optional)

2. "H" Simulant Test

Startup testing only: elapsed time since power on (min)	N/A		
Challenge time (sec)	/		
Time to alarm (sec)	_3		
Horn sounds	Pass Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister	Pass/Fail	Pass / Fail	Pass / Fail
(Note 1)			
Record response(s)	NRV L M H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	Pass/Fail	Pass / Fail	Pass / Fail
Record cleardown time	0:21		

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

Startup testing only: elapsed time since power on (min)	N/A		
Challenge time (sec)	/		
Time to alarm (sec)	5	(5)	D / E-:1
Horn sounds	Pass) Fail	Pass / Fail	Pass / Fail
Display correctly identifies Nerve	Pass/Fail	Pass / Fail	Pass / Fail
(Note 1)			
Record response(s)	NRV L (M) H BLS L M H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	Pass/ Fail	Pass / Fail	Pass / Fail
Record cleardown time	0:24		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Form M43-DVT-002

Rev A (May 19, 1998)

Detector S/N	980206-5	Date:	3-24-98	
Software Ver	502-1	Time:	18: 20	
Location:	CAM CLEAN ROOM			.*
1. Initial Pow	er On		•	
A.	Uncap the air inlet and air ex	haust. Plac	e charcoal filter o	
B.	Connect communication cab	le and begin	n "Logall" file.	5 A 001. DAT
C.	Turn horn volume to full (clo	ckwise)	•	
D.	Connect power and begin sto	pwatch.		
E.	Verify startup sequence.			
			Pass	Fail
Display show	s M43-APD			
_	s the Software Version			- · · · · · · · · · · · · · · · · · · ·
Display show	s LED TEST followed by test	patterns	<u> </u>	
Display show	s HORNTEST and horn beeps	twice		
Display show	s SELFTEST			
Display show	s STANDBY and backflush be	egins		
Display show	s READY within 30 minutes a	after startur		
Recor	d Time 2:39		-	
Display goes	blank approx. 15 seconds after	READY		
	11			
Tested by:	- A		Date	3-24-98

Detector S/	N 980206-5 Date:	3-24-	98	
		185	Z5	
	CAM CLEANROOM			
1. Connect	communications cable and begin "Logal	1"		
A.	Record datafile name <u>SAOOI</u> (Attach copy of data with test records	<u>, DAT</u>	 ann 310	C F-AIR
В.	Use menu to turn on display (optiona	l)	7002.	F-AIR H 15EC G 15EC
2. "H" Sim	nulant Test			6 I SEC
C	Alarm response		<u>Pass</u>	<u>Fail</u>
	Challenge Time sec		N/A	
	Time to Alarm4sec		N/A	
	Horn Sounds			
	D: 1 etty identifies Blister (Note	: 1)		
	Record response(s) Record response(s) Record response(s) RECORD			
	Cleardown less than 5 minutes after alar. Record cleardown time42 SEC_	 m 		
	Note 1 Detector must alarm either BL		RV	
3. "G" Sir	nulant Test			
D	Alarm response		Pass	Fail
D.	Challenge Time/sec		N/A	
	Time to Alarmsec		N/A	
	Horn Sounds			
	Display correctly identifies Nerve (Note	2)		
	Record response(s) NERU Low	_		
	Cleardown less than 5 minutes after ala Record cleardown time			
	Note 2 Detector must alarm either NI	RV or NRV/	BLS	
Tested by	:	Date	3-	24-98

H/G Simulant Test Data Sheet

Detector S/N _ 980206	Date:	3-24-98	
Software Ver. 502-1		18: 28	
Location: CAM CLEAN	ROOM		
1. Connect communications ca	able and begin "Logal	11"	
A. Record datafile name	•	<u></u>	R-AIR
(Attach copy of data wi	ith test records)	5A003,5	i &
B. Use menu to turn on di	splay (optional)	(MONITOR	H 10362
2. "H" Simulant Test		(Vlova)	R-AIR I & FHAIR H 10 SEC & 10 SEC
C. Challenge detector for	10 seconds using CA	M "H" Simulant genera	ator (7 bars)
D. Alarm response		<u>Pass</u>	<u>Fail</u>
Challenge Time		N/A	
Time to Alarm	<u>7sec</u>	N/A	
Horn Sounds			
Display correctly identi			
Record response(s)	BLOT MED	-	
Cleardown less than 5 r Record cleardown time	29		
Note 1 Detector must al	arm either BLS of Bl	LS/INK V	
3. "G" Simulant Test			
E. Challenge detector for	10 seconds using CA	M "H" Simulant genera	ator (7 bars)
F. Alarm response		Pass	Fail
Challenge Time	7 sec	N/A	
Time to Alarm		N/A	
Horn Sounds			-
Display correctly ident	ifies Nerve (Note 2)		
	NERUMED	_	
Cleardown less than 5 Record cleardown time	minutes after alarm 29		
	must alarm either NR	V or NRV/BLS	
Λ		Data 7	24-98_
Tested by:		Date $\frac{3}{2}$	
Form M43-DVT-003		Rev 0 (M	arch 24, 1998)

Form M43-DVT-003

Detector S/N 980206-5	Date: 3-25-98
Software Ver	Time: (2)09:37
Location: EVC - 001	STARTUP @ -40°C

1. Initial Power On

- A. Uncap the air inlet and air exhaust. Place charcoal filter over the inlet.
- B. Connect communication cable and begin "Logall" file. 5 BOO4. DAT
- C. Turn horn volume to full (clockwise)
- D. Connect power and begin stopwatch.
- E. Verify startup sequence.

	Pass	Fail
Display shows M43-APD	<u> </u>	
Display shows the Software Version		
Display shows LED TEST followed by test patterns		
Display shows HORNTEST and horn beeps twice	<u> </u>	
Display shows SELFTEST		
Display shows STANDBY and backflush begins		
Display shows READY within 30 minutes after startup		
Record Time 2:46		
Display goes blank approx. 15 seconds after READY		

Tested by: Date 3-25-98

Detector S/N	980206-5	Date: _	3-25-98	
Software Ver.	5.02 A-1	Time:		
Location:	EVC - 001		STARTUP	@ -40°C
1. Connect co	ommunications cable and beg			
A.	Record datafile name	5 B 00 5 st records)	<u>58004.</u>	DAT F-AIR
B.	Use menu to turn on display	(optional))1 4 5:	H &
2. "H" Simul	ant Test			•
C. Al	arm response		<u>Pass</u>	<u>Fail</u>
Ch	nallenge Time <u>i</u> sec		N/A	
Ti	me to Alarm sec		N/A	
	orn Sounds	(NT-4- 1)	\ _ <u>\</u>	
Di	splay correctly identifies Blis	ster (Note 1)) _	
	Record response(s) <u>RLS</u>	LOW		,
Cl	eardown less than 5 minutes Record cleardown time2	after alarm		
No	ote 1 Detector must alarm e	either BLS	or BLS/NRV	
3. "G" Simul	ant Test			
T) A1	arm response		Pass	Fail
	nallenge Timesec		N/A	•
	me to Alarm sec		N/A	_
-	orn Sounds			
	isplay correctly identifies Ner	rve (Note 2)) <u> </u>	
	Record response(s) NRV	Low		
Cl	leardown less than 5 minutes Record cleardown time	after alarm		
N	ote 2 Detector must alarm	either NRV	or NRV/BLS	
Tested by:	Ale Wear	I	Date	3-25-98

Detector S/N	980206-5	Date:	3 - 2	25-98	
Software Ver.	5.02A-1	Time:	17:3	7	
Location:	EVC -001	Run	W(N)	4 HRS	@ -30°C
1. Connect co	ommunications cable and b				<.45
A.	Record datafile name(Attach copy of data with	5 C 007.		5143	5 <u>163</u> 5 COO8, 51
B.	Use menu to turn on disp	olay (optional)			۲-" الم
2. "H" Simul	ant Test				K
C. Al	arm response			<u>Pass</u>	<u>Fail</u>
	nallenge Timese	ec .		N/A	
	me to Alarm se			N/A	
Н	orn Sounds				
	splay correctly identifies I Record response(s) <u>BLS</u>		•		
Cl	eardown less than 5 minut Record cleardown time				
No	ote 1 Detector must aları	m either BLS o	or BLS/N	RV	
3. "G" Simul	lant Test				
D. A1	larm response			Pass	Fail
	·	ec		N/A	
		ec		N/A	
	orn Sounds				
	isplay correctly identifies Record response(s)		•		
C	leardown less than 5 minu Record cleardown time	tes after alarm			
N	ote 2 Detector must alar	m either NRV	or NRV/	BLS	
Tested by:	Mle WWear	← I	Oate	3 - 2	25 -98

Detector S/N	980206-5	Date: _	3-26-98	
Software Ve	r. <u>5.02A-1</u>	Time: _	13:32	·
Location: _	EVC-001			
1. Connect of	communications cable and b	egin "Logall"		
Α.	Record datafile name(Attach copy of data with	5 DO10, test records)	DAT	
B.	Use menu to turn on displ	ay (optional)		
2. "H" Simu	ılant Test			
C. A	larm response Challenge Time	lister (Note 1) SMED es after alarm		<u>Fail</u>
()	Alarm response Challenge Time	Nerve (Note 2) Note 2) Note 2) Solution Solution Solution 100		Fail
Tested by: _		I	Date <u>3-0</u>	6-98

Detector S/N	980206-5	Date:	3-27-98	>
Software Ver	. <u>5.02A-1</u>	Time:	9:30	
Location:	CAM CLEAN ROOM	·		
1. Initial Pow	er On			
A.	Uncap the air inlet and air exh			
B.	Connect communication cable	and begin	"Logall" file.	SEOIS. DAT
C.	Turn horn volume to full (clos	ckwise)		
D.	Connect power and begin stop	watch.		
E.	Verify startup sequence.			
			Pass	Fail
Display shov	vs M43-APD			
-	vs the Software Version			
	vs LED TEST followed by test p	patterns		
	vs HORNTEST and horn beeps			
	vs SELFTEST		<u>~</u>	
Display show	vs STANDBY and backflush be	egins		
-	ws READY within 30 minutes a			
_	rd Time 2:29		-	
Display goes	s blank approx. 15 seconds after	READY		
Tared by:	Ma Elean		Date	3-27-9

Detector S	N 980206-5	Date:	3-27-98	
Software \	Ver. <u>5.02A - 1</u>	Time:	9:40	
Location:	CAM CLEAN ROOM			
1 Connec	et communications cable and begin	"Logall"		
A.	Record datafile name5 &		1 T	
A.	(Attach copy of data with test	records)		
В.	Use menu to turn on display (optional)		
2. "H" Sir	mulant Test			
C	Alarm response		Pass Pass	<u>Fail</u>
C.	Challenge Time/_sec		N/A	
	Time to Alarm 3 sec		N/A	
	Horn Sounds			
	Display correctly identifies Bliste	r (Note 1)		
	Record response(s) BLS			
	Cleardown less than 5 minutes aff Record cleardown time 0:46			
	Note 1 Detector must alarm eith	her BLS or	BLS/NRV	
3. "G" Sin	mulant Test			
	A1		Pass	Fail
D.	Alarm response Challenge Time / sec		N/A	
	Charlenge 1 mile		N/A	
	Time to Alarm sec		-	
	Horn Sounds Display correctly identifies Nerve	(Note 2)	<u></u>	
	Record response(s) NRV			
	Record response(s)			
	Cleardown less than 5 minutes af Record cleardown time 6:	ter alarm 3.3		
Note 2 Detector must alarm either NRV or NRV/BLS				
Tested by:	Alle W Wenny	Da	te <u>3-2</u>	17-98

	Startup Test Checking	ist and To	of Data Silve	
Detector S/N	980206-5	Date: _	3/21/58	<u> </u>
Software Ver.	S.02A-1	Time: _	9:00	
Location:	Thermoton-257			
1. Initial Pow	er On			
1. IIIIIII 10.			James of f	ther over the inlet
A.	Uncap the air inlet and air exhaust. Place charcoal filter over the inlet.			
B.	Connect communication cable and begin "Logall" file. 56-017.047			
C.	Turn horn volume to full (clockwise)			
D.	Connect power and begin st	opwatch.		
E.	Verify startup sequence.			
			Pass	Fail
Display show	s M43-APD		<u> </u>	_
Display show	s the Software Version			
Display shows LED TEST followed by test patterns			<u>\</u>	
Display shows HORNTEST and horn beeps twice			$\overline{}$	
Display shows SELFTEST				_
	vs STANDBY and backflush	begins	\checkmark	
	vs READY within 30 minutes		up	
Reco	rd Time			
Display goes	s blank approx. 15 seconds aft	er READ	<i>z</i>	
	_			
	//		Date	3-31-98

Tested by:

Date

Detector S/N	980206-5	Date:	3-22-1	<u> </u>
Software Ver.	5.028-1	Time:	17:30	
Location:	CAM CLEAN			
1. Initial Powe	er On			
A.	Uncap the air inlet and air ex	thaust. Place	e charcoal filter o	ver the inlet.
В.	Connect communication cable and begin "Logall" file.			
	Record datafile name <u>5_0522A.DAT</u> (Attach copy of data with test records)			
C.	Turn horn volume to full (cle	ockwise)		
D.	Connect power and begin sto	pwatch.		
E.	Verify startup sequence.			
			Pass	Fail
Display show	s M43-APD			
Display show	s the Software Version			
Display show	s LED TEST followed by test	patterns		
Display shows HORNTEST and horn beeps twice				
Display shows SELFTEST				
Display show	s STANDBY and backflush b	egins		
Display show	s READY within 30 minutes	after startup		
Recor	d Time 3:22		- /	
Display goes	blank approx. 15 seconds after	r READY		
Tested by	M. Wears		Date	5-22-98
LACTOR DV'				

Detector S/N9	80206	<u>ک۔ ک</u>
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Date: 5-22-98

Location: CAM CLEAN

- 1. Connect communications cable and begin "Logall"

 - B. Use menu to turn on display (optional)

2. "H" Simulant Test

Startup testing only: elapsed time since power on (min)	5		
Challenge time (sec)	1		
Time to alarm (sec)	3		
Horn sounds	Pass Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister	Pass/ Fail	Pass / Fail	Pass / Fail
(Note 1)			
Record response(s)	NRV L M H (BL\$) L (M)H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	Pass Fail	Pass / Fail	Pass / Fail
Record cleardown time	0:35		

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

Startup testing only: elapsed time since power on (min)	7		
Challenge time (sec)	/		
Time to alarm (sec)	5		D /E 11
Horn sounds	Pass/Fail	Pass / Fail	Pass / Fail
Display correctly identifies Nerve	Pass/ Fail	Pass / Fail	Pass / Fail
(Note 1)			
Record response(s)	ONRY L MOH	NRV L M H	NRV L M H
(c)	BLS L M H	BLS L M H	BLS L M H
Cleardown less than 5 minutes	Pass Fail	Pass / Fail	Pass / Fail
after alarm (mm:ss)			
Record cleardown time	2:4/*		
Note 2 Detector must alarm e	ither NRV or NRV	BLS * Deta	ECTOR RE-ALAR

d by: Ile to the Date

PETECTOR RE-ALAMASER APPARX 36 SECONDS

5-22-98

Tested by:

H/G Simulant Test Data Sheet

Detector S/N 980206-5	کک	-22-98	
		42 Pm	
Software Ver. 5.028-1	1 mic		
Location: <u>CAM CLEAN</u>	•		
1. Connect communications cable and begin			
A. Record datafile name	ls) ,		
B. Use menu to turn on display (option	al)		
2. "H" Simulant Test			-1
C. Challenge detector for 10 seconds v	ising CAM "H" Sim	ulant generato	r (7 bars) Fail
D. Alarm response			<u>1 a11</u>
Challenge Timesec		N/A	
Time to Alarm sec		N/A	
Horn Sounds			
Display correctly identifies Blister (Note 1)		
Record response(s) BLS M	<u>ed</u>		
Cleardown less than 5 minutes after	alarm		
Record cleardown time	23		
Note 1 Detector must alarm either B	LS or BLS/NRV		
3. "G" Simulant Test			
E. Challenge detector for 10 seconds	using CAM "H" Sin	nulant generato	or (7 bars)
F. Alarm response		Pass	Fail
Challenge Time6sec		N/A	
Time to Alarm6sec		N/A	
Horn Sounds			
Display correctly identifies Nerve (Note 2)		
Record response(s) <u>NRV</u> MO	ر د		
BL3 L	0 W	_	
Cleardown less than 5 minutes afte	r alarm	2	
Record cleardown time	1:40		
Note 2 Detector must alarm either	er NRV or NRV/BL	3	
Tested by: Me Colon	Date		2-48

Form M43-DVT-003

Rev A (May 19, 1998)

Startup Test Checklist and Test Data Sheet

Detector S/N	980206 - 5 Date:	5-26-98	
Software Ve	r. <u>5.028-1</u> Time:	8:40	
Location: 4	EVC POOL 0277		
1. Initial Pov	wer On		
A.	Uncap the air inlet and air exhaust. Place	ce charcoal filter o	ver the inlet.
В.	Connect communication cable and begin	n "Logall" file.	
	Record datafile name (Attach copy of data with test records)	0526 <u>A</u> .DA	7
C.	Turn horn volume to full (clockwise)		
D.	Connect power and begin stopwatch.		
E.	Verify startup sequence.	,	
		Pass	Fail
Display sho	ws M43-APD	<u>~</u>	
Display sho	ws the Software Version		
Display sho	ws LED TEST followed by test patterns	<u> </u>	
Display sho	ws HORNTEST and horn beeps twice		
Display sho	ows SELFTEST		
_	ows STANDBY and backflush begins	<u>-/</u>	
_	ows READY within 30 minutes after startu	p	
	ord Time <u>4:50</u>	- /	
Display go	es blank approx. 15 seconds after READY		
Tosted by:	Me) 2000	Date	5-26-98

Detector S/N 980206 - 5

Date: 5-26-98

Software Ver. <u>5.028-1</u>

Time: <u>8:47</u>

Location: EVC POOL 0277

- 1. Connect communications cable and begin "Logall"

 - B. Use menu to turn on display (optional)

2. "H" Simulant Test

Startup testing only: elapsed time	フ ′	12'	
since power on (min)	4"	<i>j "i</i>	
Challenge time (sec)	7	7"	
Time to alarm (sec)		3 /F-:1	Pass / Fail
Horn sounds	Pass / Fail	Pass / Fail	
Display correctly identifies Blister	Pass / Fail	Pass / Fail	Pass / Fail
(Note 1)			NDV I M H
Record response(s)	NRV L M H	NRV L M H	NRV L M H
100010 105p osse (c)	BLS L M H	BLS M H	BLS L M H
Cleardown less than 5 minutes	Pass / Fail	Pass Fail	Pass / Fail
after alarm (mm:ss)			
Record cleardown time	DI C. DI CA	20"	

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

Ollimant 1 epr			
Startup testing only: elapsed time since power on (min)	10'	·	,
Challenge time (sec)	1		
Time to alarm (sec)	7	7 / 1	Pass / Fail
Horn sounds	Pass/Fail	Pass / Fail	
Display correctly identifies Nerve	Pass / Fail	Pass / Fail	Pass / Fail
(Note 1)		NEW TOTAL	NRV L M H
Record response(s)	NRV L M H BLS L M H	NRV L M H BLS L M H	BLS L M H
Cleardown less than 5 minutes	(Pass) Fail	Pass / Fail	Pass / Fail
after alarm (mm:ss)			
Record cleardown time	4/"		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: <u>Allewe</u>

Date

5-26-98

Form M43-DVT-002

Rev A (May 19, 1998)

Detector S/N	980206-5	Date:	5-26-98
Software Ver	5.028-1	Time:	13:28

Location: <u>EVC Pool</u> 0277

- 1. Connect communications cable and begin "Logall"

 - B. Use menu to turn on display (optional)

2. "H" Simulant Test

Startup testing only: elapsed time since power on (min)	N/A		
Challenge time (sec)	i		
Time to alarm (sec)	4		
Horn sounds	(Pass) Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister	Pass / Fail	Pass / Fail	Pass / Fail
(Note 1)			
Record response(s)	NRV L M H	NRV L M H	NRV L M H
• • • • • • • • • • • • • • • • • • • •	BLS(I) M H	BLS L M H	BLS L M H
Cleardown less than 5 minutes	Pass Fail	Pass / Fail	Pass / Fail
after alarm (mm:ss)			
Record cleardown time	0:28		

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

Startup testing only: elapsed time since power on (min)	N/A		
Challenge time (sec)	/		
Time to alarm (sec)	フ		
Horn sounds	Pass/Fail	Pass / Fail	Pass / Fail
Display correctly identifies Nerve (Note 1)	Pass Fail	Pass / Fail	Pass / Fail
Record response(s)	NRY LMH BLS L M H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	Pass / Fail	Pass / Fail	Pass / Fail
Record cleardown time	1:04		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: Date

5-26-98

Blank

APPENDIX B. GOVERNMENT EVALUATION TEST DATA: AGENT VAPOR

Blank

Notes																																					
Clear	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:01:54	#VALUE!	00:00:37	00:00:00	00:00:47	########	00:00:00	00:00:00	00:00:00	00:00:33	00:00:59	00:00:30	00:00:30	00:00:30	00:00:18	00:00:30	00:00:30	00:00:29	00:00:29	00:00:31	00:00:19	00:00:22	00:00:50	00:00:24	00:00:19
Alarm Time	#########	#######	#######	########	######	########	########	########	########	########	########	#########	00:01:13	#VALUE!	00:00:10	#########	00:00:20	00:00:40	########	#########	00:00:32	00:00:13	00:00:19	00:00:15	00:00:50	00:00:10	00:00:23	00:00:15	00:00:25	00:00:13	00:00:34	00:00:14	00:00:50	00:00:18	00:00:12	00:00:50	00:00:17
Cond	00:02:00	14:55:05	00:00:57	00:01:51	00:01:29	00:01:38	00:01:17	00:01:00	00:01:23	00:01:06	00:02:09	00:01:45	00:01:07	00:01:45	00:02:06	00:01:15	00:02:24	00:00:10	00:03:04	00:01:40	00:01:47	00:01:22	00:00:43	00:01:13	00:01:08	00:01:24	00:01:41	00:02:10	00:02:15	00:01:06	00:01:35	00:01:39	00:00:28	00:00:42	00:00:11	00:00:20	00:00:12
Resp							No alarm	Alarm		Alarm	No Alarm	Alarm		No Alarm	No Alarm	Alarm	Alarm	Alarm	Alarm	Nerve low	Nerve low	Nerve low	Nerve low	Nerve low													
Clear													14:41:29		15:07:54		15:32:07				09:18:10		10:01:10	10:16:07		10:44:40	13:20:45	13:46:44	_	14:33:33	\vdash	15:05:47	_		\rightarrow		10:26:05
Alarm													14:39:35	no alarm	15:07:17		15:31:21	15:33:45			09:17:40	09:34:10	10:00:42	10:15:37	10:31:20	10:44:10	13:20:26	13:46:14	14:19:17	14:33:04	14:52:31	15:05:15		09:31:18	09:54:19	-	10:25:46
On Agent	14:50:51	14:55:05	14:57:12	15:16:16	15:18:52	15:21:38	09:34:38	09:47:06	10:15:35	10:28:42	10:54:35	11:08:02	14:38:23	14:44:05	15:07:07	15:25:54	15:31:00	15:33:05	15:38:00	15:44:01	09:17:08	09:33:57	10:00:23	10:15:22	10:31:01	10:43:59	13:20:03	13:45:59	14:18:52	14:32:51	14:51:58	15:05:02	09:16:53	09:31:00	09:54:02	10:07:00	10.25:29
On Cond	14:45:51		14:56:14	15:14:25	15:17:23	15:20:00	09:33:21	09:46:06	10:14:12	10:27:36	10:52:26	11:06:18	14:37:15	14:42:20	15:05:01	15:24:39	15:28:36	15:32:55	15:34:57	15:42:21	09:15:21	09:32:35	09:59:40	10:14:09	10:29:53	10:42:36	13:18:21	13:43:49	14:16:38	14:31:45	14:50:22	15:03:23	09:15:55	09:30:13	09:53:51	10:06:10	10:25:17
Det#	F	_	-	7	7	2	-	7	-	2	~	7	-	7	-	2	-	_	2	2	1	7	-	7	_	2	-	7	_	7	_	2	-	7	₹-	7	
Temp	20	20	20	50	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
픁	%0	%	%0	%0	%	%0	06	06	90	90	90	6	6	90	90	8	90	8	6	06	2	7	7	7	7	2	92	92	92	92	92	92			က		က
Conc (ug/l)	0.091	0.091	0.091	0.091	0.091	0.091	0.122	0.122	0.13	0.13	0.122	0.122	1.017	1.017	-	-	-	1	_	_	0.104	0.104	0.115	0.115	0.116	0.116	0.14	0.14	0.111	0.111	0.119	0.119	0.099	0.099	0.113	0.113	0.117
Agent	GD	G	GD	GD	GD	GD	Q9	G	GD	9	СD	GD	СĐ	G	GD	GD	СĐ	GD	G	GD	GA	ď	ВĄ	ВĄ	ВĄ	Θ	ĞΑ	ВA	ВĄ	Ø,	Ğ	GA	GB	GB	GB	GB	GB
Date	8/3/88	8/3/88	86/2/8	8/3/98	8/3/98	8/3/88	8/4/98	8/4/98	8/4/98	8/4/98	8/4/98	8/4/98	8/4/98	8/4/98	8/4/98	8/4/98	8/4/98	8/4/98	8/4/98	8/4/98	86/2/8	86/2/8	86/2/8	8/2/8	8/2/8	8/2/8	8/2/8	8/2/8	8/2/8	8/2/8	8/2/8	8/2/8	86/9/8	86/9/8	86/9/8	86/9/8	86/9/8

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Notes	MOIES																					Realrmed			Realrmed														
Clear	Time	00:00:19	00:00:20	00:00:19	00:00:20	00:00:19	00:00:19	00:00:19	00:00:30	00:00:29	00:00:29	00:00:26	00:00:29	00:00:27	00:00:29	00:00:30	00:00:29	00:00:29	00:00:29	00:00:26	00:01:10	00:01:03	00:01:07	00:00:57	00:01:30	00:00:28	00.00.44	00:00:56	00:00:00	00:00:21	00:00:26	00:00:25	00:00:23	00:00:00	00:00:20	00:00:18	00:00:25	00:00:23	00:00:30
Alarm	Time	00:00:18	00:00:16	00:00:18	00:00:20	00:00:18	00:00:15	00:00:17	90:00:00	00:00:00	00:00:04	00:00:00	90:00:00	60:00:00	00:00:07	00:00:00	00:00:03	00:00:00	00:00:04	00:00:04	00:00:05	00:00:00	90:00:00	00:00:02	90:00:00	00:00:03	00.01.27	00:01:48	#######################################	00:00:25	00:00:55	00:00:10	00:00:13	#######	00:01:16	00:00:38	60:00:00	00:00:12	00:00:00
Cond	Time	00:00:11	00:00:57	00:00:45	00:00:49	00:00:57	00:00:04	00:00:19	00:00:32	00:01:47	00:00:58	00:01:05	00:01:01	00:00:43	00:01:16	00:01:05	00:00:31	00:00:34	00:01:13	00:00:29	00:00:42	00:00:42	00:00:34	00:00:35	00:00:59	00:01:06	08.39.54	00:01:02	00:00:53	00:01:02	00:00:32	00:00:26	00:00:35	00:01:01	00:00:53	00:00:57	00:00:23	00:00:57	00:01:10
C S S S S S S S S S S S S S S S S S S S	deau	Nerve low	BLS LOW	BLS LOW	BLS LOW	BLS LOW	BLS LOW	BLS LOW	BLS LOW	BLS LOW	BLS LOW	BLS LOW	BLS LOW	BLS LOW	BLS LOW	BLS LOW	BLS LOW	BLS LOW	BLS LOW	BLS LOW	Nerve fow	Nerve low		10:16:03 Nerve low	VX L*	VX L*7	Nerve low	no alarm	Nerve low		14:27:19 Nerve low	Nerve low							
Clear	500	10:38:36	13:25:32		14:00:38	14:12:36	14:23:52	14:34:57	08:51:27	09:00:25	09:19:40	09:37:52	Ţ	10:06:26	10:51:25	11:08:24	11:30:50	11:44:38	12:01:22	12:13:18	-	14:17:57	14:41:43	14:56:00	15:15:24	15:24:49	08.41.32		_	10:16:03	10:27:42	10:52:52	11:17:22		12:54:24		-	14:42:23	
Alarm		10:38:17	13:25:13	13:36:13	14:00:18	14:12:17	14:23:32	14:34:38	08:50:57	08:59:56	09:19:11	09:37:26	09:54:56	10:05:59	10:50:56	11:07:55	11:30:21	11:44:09	12:00:54	12:12:52	14:02:52	14:16:54	14:40:36	14:55:03	15:13:53	15:23:51	08.41.21	09:01:12		10:15:42	10:27:17	10:52:27	11:16:59		12:54:03	13:27:52	14:26:55		15:04:30
ő	Agent	10:37:59	13:24:57	13:35:56	13:59:58	14:11:59	14:23:17	14:34:21	08:50:51	08:59:53	09:19:07	09:37:23	09:54:50	10:05:50	10:50:49	11:07:48	11:30:17	11:44:01	12:00:49	12:12:48	14:02:47	14:16:46	14:40:30	14:55:00	15:13:48	15:23:47	08:39:54	08:59:23	09:47:46	10:15:17	10:26:22	10:52:18	11:16:46	12:32:41	12:52:47	13:27:14	14:26:46		15:04:28
ő	Cond	10:37:47		13:35:11	13:59:09	14:11:02	14:23:13	14:34:02	08:50:19	90:85:80	09:18:09	09:36:18	09:53:49	10:05:07	10:49:32	11:06:42	11:29:47	11:43:27	11:59:36	12:11:48	14:02:05	14:16:04	14:39:56	14:54:25	15:12:49	15:22:42		08:58:21	09:46:53	10:14:15	10:25:49	10:51:22	11:16:11	12:31:40	12:51:55	13:26:17	14:26:23	14:40:50	15:03:19
Det#		2	-	7	_	7	-	2	-	7	-	2	-	2	1	7	-	7	-	2	1	7	-	7	-	7	4-	~ ~	-	8	-	-	2	-	7	-	₩	7	τ-
Temp		20	20	20	70	20	20	20	20	70	20	20	20	20	20	20	20	20	20	20	20	20	70	20	20	20	20	8	20	20	20	20	20	20	20	20	20	20	20
H.		ဗ	6	8	8	06	06	06	က	က	ო	က	ო	3	88	88	88	88	88	88	3	က	က	က	က	က	67	က	က	က	က	ო	3	06	6	6	06	06	06
Conc	(ng/l)	0.117	0.108	0.108	0.109	0.109	0.114	0.114	1.933	1.933	2.12	2.12	2.047	2.047	2.197	2.197	2.154	2.154	2.258	2.258	36	36	34	34	52.917	52.917	2	~	<i>د-</i>	0.058	0.058	0.15	0.15	0.29	0.11	0.1	0.1	0.31	0.31
Agent	•	GB	GB	89 (38	6B	99	GB	GB	皇	유	皇	오	오	모	유	웃	모	운	呈	日	무	욷	모	웃	웊	유	×	×	×	×	×	×	×	ΧΛ	×	×	×	×	×
Date		8/9/8	86/9/8	86/9/8	86/9/8	86/9/8	86/9/8	8/9/8	8/1/8	8/2/8	86/2/8	86/2/8	8/2/8	8/1/98	86/2/8	86/2/8	86/2/8	86/2/8	86/2/8	8/1/98	8/1/8	8/1/8	8/1/8	8/1/8	8/1/8	8/1/98	8/8/88	8/8/8	86/8/8	86/8/8	86/8/8	86/8/8	8/8/88	8/8/8	8/8/8	8/8/88	86/8/8	86/8/8	86/8/8

Notes				peak below edge		detector alarmed																														
Clear	00:00:24	00:00:00	00:00:00	00:00:00	00:00:22	00:00:00	00:00:24	00:00:23	00:00:22	00:00:20	00:00:11	00:00:25	00:00:25	00:00:33	00:00:24	00:00:25	00:00:24	00:00:50	00:00:21	00:00:20	00:00:23	00:00:20	00:00:20	00:00:20	00:00:20	00:00:50	00:00:50	00:00:20	00:00:21	00:00:00	00:00:20	00:00:23	00:00:21	00.00	00:00:23	******
Alarm	00:00:15	#########	########	#########	80:00:00	########	00:00:02	00:00:12	90:00:00	00:00:24	00:00:20	00:00:16	20:00:00	00:00:12	00:00:00	00:00:14	00:00:00	00:00:50	00:00:21	00:00:19	00:00:20	00:00:50	00:00:50	00:00:16	00:00:19	00:01:20	00:00:08	00:00:02	60:00:00	#######	80:00:00	00:00:14	00:00:08	00.00	00:00:00	;
Cond	00:00:57	00:00:42	00:00:20	00:01:31	00:01:05	00:00:13	00:01:03	00:00:15	00:01:08	00:00:31	00:00:37	00:00:38	00:01:30	00:03:08	00:00:57	00:03:29	00:00:22	00:02:14	00:01:58	00:01:07	00:01:00	00:01:25	00:01:29	00:01:08	00:01:10	00:01:25	00:01:59	00:00:34	00:00:44	00:00:55	00:00:20	00:01:08	00:01:05	00:00:43	00:00:31	
Resp	Nerve low	No Alarm	No Alarm	No Alarm	Nerve low	NO alarm	Nerve low	Nerve low	Nerve low	Nerve low	· Nerve low	10:03:50 Nerve med	Nerve med	Nerve med	Nerve med	Nerve med	Nerve med	Nerve low	Nerve low	Nerve low	Nerve low	Nerve low	Nerve low	Nerve low	Nerve low	Nerve low	Nerve low	Nerve low	Nerve low	no alarm	14:33:38 Nerve low	14:41:16 Nerve low	Nerve low	10:02:03 Nerve low	10:09:46 Nerve low	
Clear	15:25:36				13:22:40		13:27:35	14:01:20	14:03:25	14:05:24	14:11:50	10:03:50	10:06:40	10:11:22	10:13:17	10:17:47	10:19:39		10:50:48	10:54:23	10:56:48	11:11:15	11:13:43	11:17:07	11:19:12	13:52:43	13:55:32	14:04:28	14:06:26			14:41:16	14:43:12			
Alarm	15:25:12				13:22:18		13:27:11	14:00:57	14:03:04	14:05:04	14:11:39	10:03:24	10:06:15	10:10:49	10:12:54	10:17:22	10:19:15	10:47:24	10:50:27	10:54:03	10:56:25	11:10:55	11:13:23	11:16:47	11:18:52	13:52:23	13:55:12	14:04:08	14:06:06		14:33:18	14:40:53	14:42:51	10.01.40	_	_
On Agent	15:24:58	14:20:10	14:29:09	13:18:34	13:22:10	13:23:52	13:27:06	14:00:45	14:02:58	14:04:40	14:11:19	10:03:09	10:06:08	10:10:37	10:12:47	10:17:08	10:19:08	10:47:04	10:50:06	10:53:44	10:56:06	11:10:34	11:13:03	11:16:31	11:18:34	13:51:02	13:55:04	14:04:01	14:05:56	14:29:11	14:33:10	14:40:38	14:42:43	10.01.12	10:09:15	2
Cond	15:24:01	14:19:28	14:28:49	13:17:03	13:21:04	13:23:39	13:26:02	14:00:30	14:01:49	14:04:09	14:10:42	10:02:31	10:04:38	10:07:29	10:11:49	10:13:39	10:18:12	10:44:50	10:48:08	10:52:36	10:55:06	11:09:09	11:11:33	11:15:23	11:17:23	13:49:38	13:53:05	14:03:27	14:05:13	14:28:16	14:32:20	14:39:30	14:41:38	10.00.28	10:08:44	
Det #	1	-	2	-	7	~	7	~	ч	← :	2	←	7	~	7	-	2		7		7	_	7	-	2	-	7		7	~	7	_	2	-	- 8	ì
Temp	20	52	52	93	-30	-30	9	99	-30	ဇ္	-30	-30	-30	-30	-30	-30	-30	25	25	25	25	25	52	52	52	52	52	25	25	25	25	25	52	53	25	;
표	06	25	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	59	59	53	58	59	53	59	29	53	53	53	59	58	58	59	29	92	2,00	1
Cone (ug/l)	0.31	2.06	2.06	0.112	0.112	0.112	0.112	0.104	0.104	0.104	0.104	0.114	0.114	0.114	0.114	0.114	0.114	0.121	0.121	0.121	0.121	0.125	0.125	0.125	0.125	0.126	0.126	0.126	0.126	0.118	0.118	0.118	0.118	0.055	0.055	;
Agent	×	오	HD	89	GB GB	GB	GB	œ	GB	eg (GB	GD	G	G	СD	G	СD	GB	GB	8 8	g B	ВВ	GB	GB	GB	ŒЭ	9	GD	СĐ	0 9	GD	GD	GD	X/	\$ \$:
Date	8/8/8	8/10/98	8/10/98	8/11/98	8/11/98	8/11/98	8/11/98	8/11/98	8/11/98	8/11/98	8/11/98	8/12/98	8/12/98	8/12/98	8/12/98	8/12/98	8/12/98	8/13/98	8/13/98	8/13/98	8/13/98	8/13/98	8/13/98	8/13/98	8/13/98	8/13/98	8/13/98	8/13/98	8/13/98	8/13/98	8/13/98	8/13/98	8/13/98	8/14/08	8/14/98	5

	Notes													autocal @ 1min) (The state of the state of th		
Clear	Time	00:00:26	00:00:26	00:00:31	00:00:26	00:00:50	00:00:46	00:00:47	00:00:33	00:00-47	00:00:44	00:00:22	00:00:23			00.00-23	00:00:28
Alarm	Time	00:00:15	90:00:00	00:00:30	00:00:19	00:00:00	00:00:00	90:00:00	00:00:02	00:00:02	00:00:04	00:01:27	00:00:37	00:01:38	00.00.48	00.00	00:00:14
Cond	Time	00:00:51	00:00:44	00:00:41	00:00:31	00:01:00	00:01:17	00:01:21	00:01:08	00:01:09	00:00:44	00:01:09	00:01:03	00:01:24	00:00:44	00:02:41	00:01:01
6	dsau	Nerve low	Nerve low	Nerve low	Nerve low	BLS MED	Bls Low	Bis Med	Bls Low	Bls Low	Bls Low	Ner low	Ner low	Ner low	Ner low	Nerlow	Ner low
100	Jean Clear	10:25:39 Nerve low	10:40:26 Nerve low	10:45:14 Nerve low	11:02:43 11:03:14 11:03:33 11:03:59 Nerve low	13:58:03 BLS MED	14:07:56	14:13:55	14:29:13	14:38:21	14:49:53	09:34:56	10:11:02	10:30:07	10:59:59	11:16:57	11:37:48
Alam		10:25:13	10:40:00	10:44:43	11:03:33	13:57:13	14:07:10	14:11:42 14:13:03 14:13:09	14:28:40	14:37:34	14:49:09	09:33:06 09:34:34 09:34:56	10:10:38	10:29:44	10:59:36	11:13:04 11:15:45 11:16:34 11:16:57	11:36:04 11:37:06 11:37:20 11:37:48
ű	Agent	10:24:58	10:39:55	10:44:13	11:03:14	13:57:06	14:07:03	14:13:03	14:28:35	14:37:28	14:49:05	90:88:00	10:10:02	10:28:06	10:58:04 10:58:48	11:15:45	11:37:06
ō	Cond	10:24:07	10:39:11	10:43:32	11:02:43	13:56:06	14:05:46	14:11:42	14:27:27	14:36:19	14:48:21	09:31:57	10:08:59	10:26:42	10:58:04	11:13:04	11:36:04
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Agent		××	×	×	×	모	무	유	오	유	오	≶	×	×	š	š	×
Date		8/14/98	8/14/98	8/14/98	8/14/98	8/11/98	8/11/98	8/11/98	8/11/98	8/11/98	8/11/98	8/18/98	8/18/98	8/18/98	8/18/98	8/18/98	8/18/98

Startup Test Checklist and Test Data Sheet

	980206-4	Date:	8-3-98	
Software Ver	r. <u>5.028-1</u>	Time:	9:73	
Location: _	ERDEC E3510			
1. Initial Pow	ver On			
A.	Uncap the air inlet and air e	xhaust. Place	e charcoal filter	over the inlet.
B.	Connect communication cal	ble and begin	"Logall" file.	
	Record datafile name 7.6 (Attach copy of data with te	4/00 DA-	-	
C.	Turn horn volume to full (cl	lockwise)		
D.	Connect power and begin st	opwatch.		
E.	Verify startup sequence.			
			Pass	Fail
Display show	vs M43-APD		<u> </u>	
Display show	s the Software Version		<u>V</u>	
Display show	s LED TEST followed by tes	t patterns	<u></u>	
Display show	s HORNTEST and hom beep	s twice	<u> </u>	
Display show	s SELFTEST		<u> </u>	
Display show	s STANDBY and backflush b	egins	<u> </u>	
Display show	s READY within 30 minutes	after startup	<u> </u>	
Recor	d Time 2:78			
Display goes	blank approx. 15 seconds after	er READY	$\overline{}$	
Tested by:	G. Lozus / G. Wear	dr.	Date	8/7/98

Detector S/N 980206 - 4 Date: 8-3-98

Software Ver. <u>5.028</u> - Time: <u>9:17</u>

Location: ERDEC E3510

- 1. Connect communications cable and begin "Logall"
 - Record datafile name To 4100. DAT A. (Attach copy of data with test records)
 - Use menu to turn on display (optional) B.

2. "H" Simulant Test

Startup testing only: elapsed time since power on (min)	H 6,00		
Challenge time (sec)	1		
Time to alarm (sec)	3		
Horn sounds	Pase / Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister (Note 1)	Pass / Fail	Pass / Fail	Pass / Fail
Record response(s)	(NRV L) M H	NRV L M H	NRV L M H
	(BLS L) M H	BLS L M H	BLS L M H
Cleardown less than 5 minutes	Paso/Fail	Pass / Fail	Pass / Fail
after alarm (mm:ss)			
Record cleardown time	00: 24 sec		

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

Startup testing only: elapsed time since power on (min)	7100		
Challenge time (sec)	1		
Time to alarm (sec)	2		
Horn sounds	Pass/Fail	Pass / Fail	Pass / Fail
Display correctly identifies Nerve (Note 1)	Pass / Fail	Pass / Fail	Pass / Fail
Record response(s)	ORV L M(H) (BLS(D) M H)	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	Pass / Fail	Pass / Fail	Pass / Fail
Record cleardown time	01:05		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Date

8/3/98

Form M43-DVT-002

Rev B (June 9, 1998)

Startup Test Checklist and Test Data Sheet

	980206-5	Date:	8-3-98	
₹ ET6-2 Software Ver	5.628-1	Time: _	5:45)56	
Location: _	ERDEC E3510			
1. Įnitial Pow	er On			
A.	Uncap the air inlet and air e	xhaust. Plac	ce charcoal filter	over the inlet.
B.	Connect communication cal	ble and begin	n "Logall" file.	
	Record datafile name		17	
C.	Turn horn volume to full (c	lockwise)		
D.	Connect power and begin st	opwatch.		
E.	Verify startup sequence.			
			Pass	Fail
Display show	s M43-APD		<u></u>	
Display show	s the Software Version		<u> </u>	
Display show	s LED TEST followed by tes	t patterns	<u> </u>	
Display show	s HORNTEST and horn beep	s twice	<u> </u>	
Display show	rs SELFTEST		<u> </u>	
Display show	rs STANDBY and backflush b	pegins	<u> </u>	
Display show	rs READY within 30 minutes	after startup	<u> </u>	
Recor	d Time 2:38		_	
Display goes	blank approx. 15 seconds after	er READY	\checkmark	
Tested by:	G. Luzu / G. Wearen	_	Date	8/3/58

Detector S/N 980206-5

Date: 8 - 3 - 98

Software Ver. 5.628-1

Time: 9145:56

Location: ERDEC E3510

- 1. Connect communications cable and begin "Logall"

 - B. Use menu to turn on display (optional)

2. "H" Simulant Test

Startup testing only: elapsed time since power on (min)	€: 00		
Challenge time (sec)	i		
Time to alarm (sec)	1		
Horn sounds	Pass / Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister	Pass / Fail	Pass / Fail	Pass / Fail
(Note 1)			
Record response(s)	ORVO M H	NRV L M H	NRV L M H
	BLSO M H	BLS L M H	BLS L M H
Cleardown less than 5 minutes	Pass/Fail	Pass / Fail	Pass / Fail
after alarm (mm:ss)			
Record cleardown time	60:J2		

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

Startup testing only: elapsed time since power on (min)	7,00		
Challenge time (sec)	1		
Time to alarm (sec)	3		
Horn sounds	Paso/ Fail	Pass / Fail	Pass / Fail
Display correctly identifies Nerve (Note 1)	Pass / Fail	Pass / Fail	Pass / Fail
Record response(s)	NR) LM H BLS L M H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	(Pass)/Fail	Pass / Fail	Pass / Fail
Record cleardown time	00:35		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: ME Lower / Hogen

Date

8/1/58

Form M43-DVT-002

Rev B (June 9, 1998)

page of

Data Entry Form	ε.		-		Caca				- 12D
Purpose of test:	انيد		lest Location:	Date:	Operator.				
re, fr. VO			ERDEC	15/1/8	97	1620			MY7 431-X4215
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	davsig					1	2	2	Ution
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page 2 of

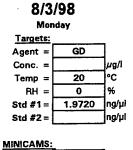
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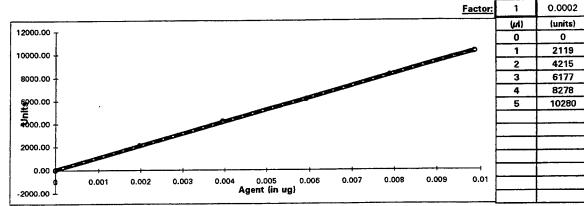
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Data Entry Form Purpose of test:	rm st:		Test Location:	Date:	Č	Operator				→ bage →	, jo
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M43 Upgrade



100



Project: Provide GD, GB, GA, VX, and HD to contractor to set windows

cc/m

Operators: Juan & Sonny

Flow =

Time =

NOTES:

1 Set agent generator for GD.

2 Run Standard Curve using GD @ 1.972 ng/ul

	GD	Log File
1	2245	0609
2	4698	0614
3	6926	0618
4	9138	0623
5	10280	0641

	GD General	tor Settings	
agent =	1.5 cc/m	gen temp =	20.0 C
dry air =	3.0 l/m	gen RH =	0 %
wet air =	0.0 Vm	amb temp =	
agt temp =	5 C	amb RH =	

3 Sample # 1 (30 sec @ 100 cc/min) = 2941 nA = .056 mg/m3	Log file = 0833
4 Increase Agent concentration.	
5 Sample # 2 (30 sec @ 100 cc/min) = 7432 nA = .142 mg/m3	Log file = 0856
6 Decrease Agent concentration.	
7 Sample # 4 (30 sec-@ 100 cc/min) = 3922 nA = .074 mg/m3	
8 Sample # 5 (30 sec @ 100 cc/min) = 6308 nA = .12 mg/m3	Log file = 1026
5 5 + 5 (00 @ 100) - 6142 -A - 117 mg/m ²	Log file - 1142

9 Sample # 6 (30 sec @ 100 cc/min) = 6142 nA = .117 mg/m3 Log file = 114
10 Start test - MSS & Intellitec

11 Sample # 7 (30 sec @ 100 cc/min) = 5534 nA = .105 mg/m3 Log file = 1250 12 Continue testing

13 Sample # 8 (30 sec @ 100 cc/min) = 4793 nA = .091 mg/m3 Log file = 1344

14 Start test - ETG

Operator____

Operator____

Detector S/N 980266-\$4 Date: 8-4-98

Software Ver. 5.028-1 Time: 08:35

Location: ERDEC E3510

- 1. Connect communications cable and begin "Logall"
 - A. Record datafile name <u>T04/07. DAT</u>
 (Attach copy of data with test records)
 - B. Use menu to turn on display (optional)

2. "H" Simulant Test

Startup testing only: elapsed time			
since power on (min)			
Challenge time (sec)	1		
Time to alarm (sec)	2_		
Horn sounds	Pass Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister	Passy Fail	Pass / Fail	Pass / Fail
(Note 1)			
Record response(s)	NRV L M H	NRV L M H	NRV L M H
	OELS) LOO H	BLS L M H	BLS L M H
Cleardown less than 5 minutes	Pass/Fail	Pass / Fail	Pass / Fail
after alarm (mm:ss)	•		
Record cleardown time	0:25		

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

Startup testing only: elapsed time			
since power on (min)			
Challenge time (sec)	1		
Time to alarm (sec)	3		
Horn sounds	Pass Fail	Pass / Fail	Pass / Fail
Display correctly identifies Nerve	Passy Fail	Pass / Fail	Pass / Fail
(Note 1)			
Record response(s)	NRV M H	NRV L M H	NRV L M H
	BLSOD M H	BLS L M H	BLS L M H
Cleardown less than 5 minutes	Pass/ Fail	Pass / Fail	Pass / Fail
after alarm (mm:ss)			
Record cleardown time	0:40		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: Mesers Date 8-4-98

Form M43-DVT-002

Rev B (June 9, 1998)

Detector S/N	980206-X5
--------------	-----------

Date: 8-4-98

Time: 08:30

Location: ERDEC E3510

- 1. Connect communications cable and begin "Logall"
 - (Attach copy of data with test records)
 - Use menu to turn on display (optional) B.

2. "H" Simulant Test

Startup testing only: elapsed time			
since power on (min)			
Challenge time (sec)	1		
Time to alarm (sec)	5		
Horn sounds	Pass Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister	Pass Fail	Pass / Fail	Pass / Fail
(Note 1)			
Record response(s)	NRV L M H	NRV L M H	NRV L M H
	BLS L M H	BLS L M H	BLS L M H
Cleardown less than 5 minutes	(Pass) Fail	Pass / Fail	Pass / Fail
after alarm (mm:ss)			
Record cleardown time	0:34		

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

Startup testing only: elapsed time since power on (min)	_		
Challenge time (sec)	/		
Time to alarm (sec)	2		
Horn sounds	Pass/Fail	Pass / Fail	Pass / Fail
Display correctly identifies Nerve (Note 1)	Pass/ Fail	Pass / Fail	Pass / Fail
Record response(s)	NRVID M H BLY L MH	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	Pass Fail	Pass / Fail	Pass / Fail
Record cleardown time	1:27		

Note 2 -- Detector must alarm either NRV or NRV/BLS

8-4-98 Date

Form M43-DVT-002

Rev B (June 9, 1998)

Data Entry Form #1

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Purpose of test:	Hort. avaluation	Det#: 980206-07	7	Datarile#				TOYIOT						704108		704109			T04110.	100	end WRT Indate 10:54:35	7 1

page 2 of chelleny Letime detally Comment Alarm Alarm Chalng down time class/id/conc time time 7 NR /Car WEC MEN/LON 10 Se (May/60m 52 NKV/CON Temp: 1030 Operator: 25 13 Conc(mg %Rh ろん S. 30% (10.1) 0 <u>~</u> 5. Date: EPLDEC SWVer#: SOL Test Location: clander J Clesy chern Ī 200 Sample DA7 15:74 240 Chicsist 10/51 <u>ال</u>خيلو الخيلو end LOG1.WB1 update 11 Jun 97 Time Type dat/sig 0A7 Det#: 18006-04 2/5 Data Entry Form Purpose of test: 535 一ない III hol DataFile#

Data Entry Form

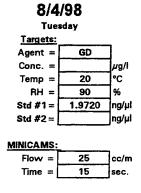
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page Z of

Data Entry Fo	E									Dage Z
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	davsig					Time	class/id/conc	T	time	
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ਰ page. Comment Alarm Chaing down class/id/conc time time イラミ Operator: Alarm BUH/3 Conc(mg %Rh No. Date: ٥ ٦ Gro clander Test Location: EMDEC A, M 2 SWver#: Sample 17.31.7L 12: 58: 36 end LOG1.WB1 update 11 Jun 97 Time Type dat/sig DAT Data Entry Form Purpose of test: [Aosed 7858L DataFile# Det#:

M43 Upgrade



2000.00	0.001	0.002	0.003	0.004 A	0.005 gent (in u	0.006 g)	0.007	800.0	0.009	0.01		
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2000.00 _T											(M)	(unit
										Factor:	1	0.00

Project: Provide GD, GB, GA, VX, and HD to contractor to set windows

Operators: Juan & Sonny

NOTES:

1 Set agent generator for GD @ 90 % RH.

2 Run Standard Curve using GD @ 1.972 ng/ul

	GD	Log File
1	2150	0618
2	4606	0648
3	6442	0627
4	8437	0633
5	10157	0638

	GD Genera	tor Settings	
agent =	1.5 cc/m	gen temp =	20.0 C
dry air =	0.0 Vm	gen RH =	90 %
wet air =	3.0 Vm	amb temp =	
agt temp =	5 C	ambRH=	

3 Sample # 1 (30 sec @ 100 cc/min) = 3054 nA = .055 mg/m3.

4 Increase Agent concentration

5 Sample # 2 (30 sec @ 100 cc/min) = 542 nA = .007 mg/m3.

6 Sample # 3 (30 sec @ 100 cc/min) = 5425 nA = .101 mg/m3.

7 Sample # 4 (30 sec @ 100 cc/min) = 6509 nA = .122 mg/m3.

8 Begin testing ETG, MSS, Intellitec

9 Sample # 5 (30 sec @ 100 cc/min) = 6975 nA = .13 mg/m3.

10 Begin second trial.

11 Sample # 6 (30 sec @ 100 cc/min) = 6530 nA = .12 mg/m3.

12 Begin third trial.

13 Sample # 7 (30 sec @ 100 cc/min) = 6995 nA = .13 mg/m3.

14 Set agent generator for GD 1.649 mg/m3

15 Sample # 8 (15 sec @ 25 cc/min) = 10867 nA = 1.513 mg/m3. 16 Decrease agent concentration.

17 Sample # 9 (20 sec @ 25 cc/min) = 9705 nA = 1.102 mg/m3.

18 Sample # 10 (15 sec @ 25 cc/min) = 6811 nA = 1.022 mg/m3.

19 Start first trial @ 1.022 mg/m3

20 Sample # 11 (15 sec @ 25 cc/min) = 6775 nA = 1.017 mg/m3.

21 Start second trial @ 1.017 mg/m3

22 Sample # 12 (15 sec @ 25 cc/min) = 6666 nA = 1.017 mg/m3.

23 Start third trial @ 1.00 mg/m3

Log file = 0712

Log file = 0738

Log file = 0813

Log file = 0823

Log file = 0907

Operator_

Operator_

Data Entry Form Purpose of test

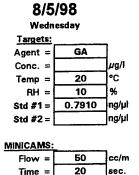
Purpose of test:		Test Location:	Date:	Operator			- ARDA	 5 _
			8/2/38	4020	7			
File-I	-	SWver# Solf	1-1-		Temp:			-
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DataFile# Tyr	Type Time	Sample	Conc(mg %Rh	اء	Alarm Chaing		Comment	
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Tot 115 Si	SIL 8:27	1 1) Rose, A.V						
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1 Juhal	P. 2.29							Ţ
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	8:14				Nuc			I
	16:3				NRV MED			-
	1:16	Clan					RET put is Southan	
15 911 401_ -104 116	2/2	The Hells						
960206-05	ETVZ				The state of the s			
5 511 saj	4.3 75	to 1) MACKEUL						
		1) Run A.K						
		J) Hant Sulke			מרז		الماء والم	
		4) Grant Sugle			N _I CV		monitor	
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pue	1,57.10							
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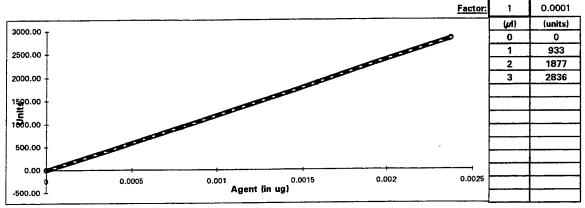
Data Entry Form Purpose of test:	St:		Test Location:	Date:		Operator:				ed	page C of
(ET(*)	\$			8/2/8		700	205				
Det#: 980206-04	6-04		SWVer#: Sulf		-	-	Temp:			9:10 G-A 0.104	
DataFile#	Tyna	Time	Sample	Conc/ma %Rh		Alarm 4		Chaind	Clean	Comment	
	dat/sig	2	Campic	6		_	d/conc	מ	time		
To4117	DAT	01.6	Run Ain		Lun						
		51.5	C) Tech Alive								
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•		10:31		0.1		20	idar con	۶	25		
704120	DA7	(J. 4)	Roy A. P.	,	土					GA Grelisi, Swore	
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72112	0.47	14:34									
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end LOG1:WB1 update 11 Jun 97	pdate 1	1 Jun 97									

Data Entry Form Purpose of test:

Purpose of test:	= = :		Test Location:	Date:		Operator:	i			∑ abad
GA	(2 July 2)			7/5/97		1.040/	. 3			
Dett. 980101-05	50-		SWver#:	5			Temp: Ist			
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705117	DA7	5.10	Rus A 111		9/27					
		9.11.2	Clas Ain							
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705118	3/2	0	₹ 5	G G	2.1%	15	NA V	٦	25	
		ځ	Clega Lynn							
725119	DAT	10;13	Air							
		77.52	Clan A.VI							
		李色	GA.	- ŏ		2	14KV Low	0.)	cZ	
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705121	<u>۲</u>	(C:7/	~ Z	0.11)	ر-	Ç.	19Kr Lun	[]	62	
			シ こまろ		(Agh					
To5121	047		Rem A. M							
\$5:SI pua		50:51 50:51	Clea. A.M.	0.119	143 ((#	(NRV Gor	4)	1 £.	
TOGT, WB1 UR	date 1	/a unr ı								A. A. A. A. A. A. A. A. A. A. A. A. A. A

M43 Upgrade





Project: Provide GD, GB, GA, VX, and HD to contractor to set windows

Operators: Juan & Sonny

NOTES:

1 Set agent generator for GA low RH.

2 Run Standard curve using GA @ .791 ng/ul.

0	0	Log File
1	933	0712
2	1877	0716
3	2836	0721

	GA Genera	tor Settings	
agent =	.19 cc/m	gen temp =	20.0 C
dryair=	3.0 Vm	gen RH =	0 %
wet air =	0.0 Vm	amb temp =	
agt temp =	5 C	amb RH =	

3 Sample # 1, (20 sec @ 50 cc/min) = 987 nA = .05 mg/m3.

4 Raise agent concentration

5 Sample # 2, (20 sec @ 50 cc/min) = 2072 nA = .104 mg/m3.

6 Start first trial.

7 Sample # 3, (20 sec @ 50 cc/min) = 2290 nA = .115 mg/m3.

8 Start second trial.

9 Sample # 4, (20 sec @ 50 cc/min) = 2298 nA = .116 mg/m3.

10 Start third trial.

11 Increase humidity, RH = 90%

12 Sample # 5, (20 sec @ 50 cc/min) = 2298 nA = .116 mg/m3.

13 Begin first trial.

14 Sample # 6, (20 sec @ 50 cc/min) = 2209 nA = .111 mg/m3.

15 Begin second trial.

16 Sample # 7, (20 sec @ 50 cc/min) = 2356 nA = .119 mg/m3.

17 Begin third trial.

Operator_____

Operator____

Startup Test Checklist and Test Data Sheet

Detector S/N	980206-4	Date:	8-6-98	
Software Ver	5.028-1	Time:	8:25	
Location:	ERDEC E3510	Detecto	in frame	unning
1. Initial Pow	er On	ernight,	in frame	lund,
A.	Uncap the air inlet and air exh	aust. Place ch	arcoal filter ov	ver the inlet.
В.	Connect communication cable	and begin "Lo	ogall" file.	
	Record datafile name			
C.	Turn horn volume to full (cloc	kwise)		
D.	Connect power and begin stop	watch.		
E.	Verify startup sequence.			
			Pass	Fail
Display shows	M43-APD			····
Display shows	the Software Version			
Display shows	LED TEST followed by test pa	atterns		-
Display shows	HORNTEST and horn beeps t	wice		
Display shows	SELFTEST			
Display shows	STANDBY and backflush beg	ins		
Display shows	READY within 30 minutes aft	er startup		
Record	Time 2:28			
Display goes b	lank approx. 15 seconds after R	EADY		
Tested by:	Atelean		Date	8-6-98

Detector S/N	980206-4	Date:	8-6-98	
Software Ver.	5.028-1	Time:	8:25	

Location: CBDcom E3510

- 1. Connect communications cable and begin "Logall"

 - B. Use menu to turn on display (optional)

2. "H" Simulant Test

Startup testing only: elapsed time			
since power on (min)			
Challenge time (sec)	1		
Time to alarm (sec)	2		
Horn sounds	Pass/Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister	Pass/Fail	Pass / Fail	Pass / Fail
(Note 1)			
Record response(s)	NRV L M H	NRV L M H	NRV L M H
	BLXO M H	BLS L M H	BLS L M H
Cleardown less than 5 minutes	Pass Fail	Pass / Fail	Pass / Fail
after alarm (mm:ss)			
Record cleardown time	0:28		

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

Startup testing only: elapsed time			
since power on (min)			
Challenge time (sec)	/		
Time to alarm (sec)	5		
Horn sounds	Passy Fail	Pass / Fail	Pass / Fail
Display correctly identifies Nerve	(Pass) Fail	Pass / Fail	Pass / Fail
(Note 1)			
Record response(s)	NRV) L(M) H	NRV L M H	NRV L M H
	BLS L M H	BLS L M H	BLS L M H
Cleardown less than 5 minutes	(Pass) Fail	Pass / Fail	Pass / Fail
after alarm (mm:ss)			
Record cleardown time	0:35		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: Date 8-6-98

Form M43-DVT-002

Rev B (June 9, 1998)

Startup Test Checklist and Test Data Sheet

Detector S/N	980206-5	Date: _	8-6-98	<u> </u>
Software Ver	5.028-1	Time: _	8-6-98	24
Location: _	ERDEC E3510			
1. Initial Pow	rer On			
A.	Uncap the air inlet and air	exhaust. Plac	ce charcoal filter	over the inlet.
В.	Connect communication ca	able and begi	n "Logall" file.	
	Record datafile name (Attach copy of data with t		4 T	
C.	Turn horn volume to full (clockwise)		
D.	Connect power and begin s	stopwatch.		
E.	Verify startup sequence.			
			Pass	Fail
Display shows	s M43-APD			
Display shows	s the Software Version			
Display shows	LED TEST followed by tes	st patterns		
Display shows	HORNTEST and horn beep	ps twice		
Display shows	SELFTEST			
Display shows	STANDBY and backflush	begins		
Display shows	READY within 30 minutes	after startup		
Record	Time 2:38			
Display goes b	lank approx. 15 seconds after	er READY		
Tested by:	Mesan		Date	8-6-9

Confidence Test Data Sheet

Detector S/N	980206-5	Date:	8-6-98	
Software Ver.	5.02B-1	Time:	08:34	

Location: BSID ERDEC

- 1. Connect communications cable and begin "Logall"

 - B. Use menu to turn on display (optional)

2. "H" Simulant Test

Startup testing only: elapsed time			
since power on (min)			
Challenge time (sec)	1		
Time to alarm (sec)	5		
Horn sounds	Pass)Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister	Pass Fail	Pass / Fail	Pass / Fail
(Note 1)			
Record response(s)	NRV L M H	NRV L M H	NRV L M H
	ELS)L D H	BLS L M H	BLS L M H
Cleardown less than 5 minutes	Pass Fail	Pass / Fail	Pass / Fail
after alarm (mm:ss)			
Record cleardown time	0:37		

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

Startup testing only: elapsed time			
since power on (min)			
Challenge time (sec)	7		
Time to alarm (sec)	10		
Horn sounds	Pass Fail	Pass / Fail	Pass / Fail
Display correctly identifies Nerve	Pass Fail	Pass / Fail	Pass / Fail
(Note 1)			
Record response(s)	NRV) L WH	NRV L M H	NRV L M H
	BLS L M H	BLS L M H	BLS L M H
Cleardown less than 5 minutes	(Pass) Fail	Pass / Fail	Pass / Fail
after alarm (mm:ss)			
Record cleardown time	1:45		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: Date 8-6-98

Form M43-DVT-002

Rev B (June 9, 1998)

page 1 of 2

				Comment								PPLR 299 SECD 247	PPLR 298-299 SECD 279								
					time		0:28	0:35		0:37	1:45	61	22	20	24	61	61				
				<u>B</u>			1	1		1	`	20	180	17	20	17	18/				
	MENRY	Temp: +00K	APPROX	\neg	class/id/conc time		825 LOW	NRV MED		BLS MED	NRV MED	WRY LOW	WRV LOW	NRVLOW	NRV LOW	NRV LOW	NRV LOW				
Operator	1/18			Alarm	_		2	7		رم	101	20	100	17	20	17	18/				
	-98	-		%Rh /								4%	4%	4%	4%	4%	4 /3				
Date:	9-8			Conc(mg								6603	660.	. 113	, 113	711.	. 117				
Test Location:	E3510	SWver#:	5.028-1	Sample		STARTUP	H CONF	G CONF	STARTUP	H CONF	GLOWE	<i>48</i>	GB	GB	48	68	4.8				
	tion			Time		0825			0834	e		0917	0931	4560	1007	1025	1040				
انن	evalue	105			dat/sig	DAT			DAT			DAT	DAT	DA7		शद	516				
Purpose of test:	Hart. a	Det#: 980206-		DataFile#		704123			705123			T04124	705124	704125	TOS125 DAT	704126	705126				

Jan. 1, anotherina	Purpose of test:	st:		Test Location:	Date:		Operator:					
Death Froze - Sweet: Temp. 7004 Alam Alam Alam Alam Sample Alam Alam Alam Alam Alam Alam Alam Alam	Lost.	and	ation	E3510	8-6-	86	A	22				X
DataFlief Type Time Sample Concluny %8th Alam Alam Alam Chaing down Comment dusting Toylor 2 Mer. 2	Det#: 980,	206-		SWver#:				Temp: + 70≠		į	H/6514	8-4-7-1
DetaFile# Type Time Sample Conc(mg %kh Alam Alam Chaling down dat/sig	4.4	4 2 5		5.028-1				ROX		Clean		VX-M-11
Toyla7 DAT 13:15 GB	- 1	Type	Time	Sample	Conc(mg				ng	down	Comment	
2947 13:25 GB 0.108 90 16 NRV LOW 16 Z 2947 13:36 GB 0.109 90 18 NRV LOW 18 1 2947 14:00 GB 0.109 90 20 NRV LOW 20 Z 2047 14:12 GB 0.109 90 18 NRV LOW 18 1 第516 14:23 GB 0.114 90 18 NRV LOW 18 1 516 14:35 GB 0.114 90 17 NRV LOW 18 1		dat/sig						class/id/conc		time		!
705/27 2017 13:36 GB 0.108 90 18 MRV 20W 18 1 1 708/28 2007 40 10 20 MRV 20W 20 20 20 MRV 20W 20 20 20 20 20 20 20 20 20 20 20 20 20	704127	247	13:25	<i>EB</i>	0.108	90	9/	NRV LOW	16	20		
TOS128 DAT 14:00 (名 0.109 90 20 MRV LOW 20 20 TOS128 DAT 14:12 (字 B 0.109 90 18 MRV LOW 18 17 17 17 17 17 17 17 17 17 17 17 17 17	705127		13:36	ĢB	0.108	90	80 7	NRV LOW	8/	19		
TOS128 Dat 14:12 GB 0.109 90 18 NRV LOW 18 17 17 17 17 17 17 17 17 17 17 17 17 17	704128	1997	14:00	GB	0.109	90		NRV LOW	20	20		
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705129 SIG 14:35 GB 0,114 90 17 NRV LOW 17 1	704129			GB	0.114	90	<i>%</i>	NRV LOW	\& '	61		
	105129	516			0.114	90		NRV LOW	17	61		
			•••									
4												
	-					-						
7												
	-											

M43 Upgrade

8/6/98 Thursday Targets: Agent = Conc. = μg/l Temp = 20 °C RH = 10 96 Std #1 = 0.3998 ng/µl Std #2= ing/µ!

	ractor	<u></u>	1
5000.00 _T	AMERICA	(μl)	Τ
i		0	Т
4500.00 +		1	Т
4000.00		2	Т
3500.00 -		3	Τ
3000.00		4	Т
200.00		5	Ι
2 <u>6</u> 0.00 - 2 <u>5</u> 0.00 -			L
1500.00 -		<u> </u>	\downarrow
1000.00		<u> </u>	4
500.00		ļ	╀
0.00			╀
-500.00 0.0002 0.0004 0.0006 0.0008 Agento(in ug) 0.0012 0.0014 0.00	0.0018 0.002		╄
-300.00			L

 Flow =
 50
 cc/m

 Time =
 15
 sec.

Project: Provide GD, GB, GA, VX, and HD to contractor to set windows

Operators: Juan & Sonny

NOTES:

1 Set agent generator for GB low RH.

2 Run Standard curve using GB @ .3998 ng/ul.

0	0	Log File
1	846	0631
2	1768	0636
3	2705	0641
4	3636	0646
5	4450	0651

	GB Genera	tor Settings	
agent =	.25 cc/m	gen temp =	20.0 C
dry air =	3.0 l/m	gen RH =	0 %
wet air =	0.0 V m	amb temp =	
agt temp =	5 C	amb RH =	

3 Sample # 1, (15 sec @ 50 cc/min) = 1383 nA = .05 mg/m3.

4 Increase agent concentraation

5 Sample # 2, (15 sec @ 50 cc/min) = 1787 nA = .064 mg/m3.

6 Increase agent concentration

7 Sample # 3, (15 sec @ 50 cc/min) = 2531 nA = .09 mg/m3. Log File = 0742

8 Increase agent concentration

9 Sample # 4, (15 sec @ 50 cc/min) = 2760 nA = .099 mg/m3.

10 Begin trail #1

11 Sample # 5, (15 sec @ 50 cc/min) = 3278 nA = .113 mg/m3.

12 Begin trail #2

13 Sample # 6, (15 sec @ 50 cc/min) = 3158 nA = .113 mg/m3. Log File = 0917

14 Begin trail #3

15 Raise humidity. RH = 90%

16 Sample # 7, (15 sec @ 50 cc/min) = 3160 nA = .113 mg/m3. Log File = 0952 17 Sample # 8, (15 sec @ 50 cc/min) = 2459 nA = .088 mg/m3. Log File = 1209

18 Increase agent concentration

19 Sample # 9, (15 sec @ 50 cc/min) = 3021 nA = .108 mg/m3. LogFile = 1224

20 Begin trail #1 @ 90% RH

21 Sample # 10, (15 sec @ 50 cc/min) = 3545 nA = .126 mg/m3. LogFile = 1249
22 Sample # 11, (15 sec @ 50 cc/min) = 3039 nA = .109 mg/m3. LogFile = 1309

23 Begin trail #2 @ 90% RH

24 Sample # 12, (15 sec @ 50 cc/min) = 3200 nA = .114 mg/m3. LogFile = 1334

25 Begin trail #3 @ 90% RH

Operator_____

0.0001

(units)

0

846

1768

2705

3636

4450

Operator____

Purpose of test:	st:		Test Location:	Date:	Operator:	or:				
Cart Eyeh,	Ehrh,			35/1/28	7	- 12 to J			IhW	
F7~ Det#: りなったら、こう	£030		SWVer#: \$ulB			Temp:				
							-	Clean		
DataFile#	Туре	Time	Sample	Conc(mg %Rh		Alarm	ng	down	Comment	
	dat/sig				time	class/id/conc time		time		
764173	DAT	ry,sa	Run Ain							
		3551	H Court Sound W			RLS Lin		,		4
177		1759	G.Co.f			Not ten	-		<i>ካ</i> ሻ	4 1/2 (1-12)
rone farther	7 7 7	(500	Me, 4. flyl,						15)w = Filt An (10e)	New Town Selfa
ナインナ	SIL	6:13								
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		y	Hery Sinh			MLS MEY			J T V, er	
		7	Geat Sale			MA Lan				
									Orth In Lie	
ETG-2 980146-05	3/26/-35									
705/7	515	S:c4	aper-9105							
CEI		h							Mossiture the be	
		Ų				MUS MED				
		3				No. 4.				
Tuster	Dat	8.26	راجة, مادي							
121	•	(1.8	Park Prof				·		-7 Ø €-	
		32.50	Rus A. H						Deted the la	
		8:29	17 contsult			Ou viei)				
pue		CT 73	Green Sull			NAV MEI)				
end OG1 WB1 indate 11 Jun 97	ndate 1	1 Jun 97	•			- 1				i

page 2_of

Type Time Sample Conc(mg %Rh davsig Fine Sample Conc(mg %Rh davsig Fine Fin		J.		Test Location:	Date:		Operator				
Stylent 5046 Sample Conclus 9/88 Alam Alam Alam Alam Alam Alam Alam Alam	1			ERDEC	_		700	30)			L+M
Ype Time Sample Conc(mg %Rh Alam Alam Alam Chaing down Chain	Deff. Color	40-00		SWver#: Sulf			-	Temp: 2ω'ς			
1 1 1 1 1 1 1 1 1 1			Time		Conclina					Clean	Comment
0AT \$13 Run Air 600 70 \$100					Building			d/conc	2	lime	
8:49 HENEAGLIA 179 600 C 112 Law G 70 Si to Hi) Can 2,12 516 973 HO 2717 Law H M1 Law H 29 Si to Hi) Can 2,12 516 973 HO 2717 Law H M2 Law H 29 Si to Hi) Can 2,12 516 973 HO 2717 Law G 172 Law G 172 Law Ho Hi Hi Hi Hi Hi Hi Hi	Torlar!	DAT	£11	Run A. W							
Signature 14D	121		(4:8	HENEWAR	6.1	B					
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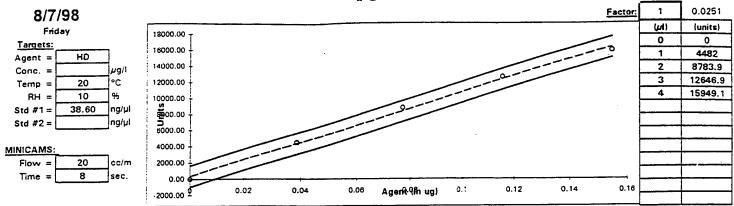
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ch 120/	CAT	M:55	Ron Air							
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										HD Chr> 52.5
735140	240	15.16	Rom Bin							
		1574	(Trees Aim		hu					(40)
		12:31	HO	575	Len	M	465 600	2	0.59	
1										
LOG1.WB1 update 11 Jun 97	date 1	1-Jun-97-								

M43 Upgrade



Project: Provide GD, GB, GA, VX, and HD to contractor to set windows

Operators: Juan & Sonny

NOTES:

1 Set agent generator for HD low RH.

2 Run Standard curve using HD @ 38.60 ng/ul.

0	0
1	4482
2	8783.9
3	12646.9
4	15949.1

	HD Genera	tor Settings	
agent =	.25 cc/m	gen temo =	20.0 C
dry air =	3.0 Vm	gen RH =	0%
wet air =	0.0 l/m	amo temo =	
agt temp =	20 C	amo RH =	3 %

- 3 Sample # 1, (50 sec @ 50 cc/min) = 13812 nA = 3.11 mg/m3.
- 4 Increase agent concentration
- 5 Sample # 2, (50 sec @ 50 cc/min) = 8911.5 nA = 1.9771 mg/m3.
- 6 Sample # 3, (50 sec @ 50 cc/min) = 8720 nA = 1.933 mg/m3.
- 7 Begin Trial # 1 @ 1.933 mg/m3
- 8 Sample # 4, (50 sec @ 50 cc/min) = 9528 nA = 2.12 mg/m3.
- 9 Begin Trial # 2 @ 2.12 mg/m3
- 10 Sample # 5, (50 sec @ 50 cc/min) = 9214 nA = 2.047 mg/m3.
- 11 Begin Trial # 3 @ 2.047 mg/m3
- 12 Raise Humidity. RH = 90%
- 13 Sample # 6, (50 sec @ 50 cc/min) = 10804 nA = 2.415 mg/m3.
- 14 Lower concentration
- 15 Sample # 7, (50 sec @ 50 cc/min) = 9859 nA = 2.197 mg/m3.
- 16 Begin Trial # 1 @ 1.933 mg/m3 and 90% RH
- 17 Sample # 8, (50 sec @ 50 cc/min) = 9677 nA = 2.154 mg/m3.
- 18 Begin Trial # 1 @ 2.154 mg/m3 and 90% RH
- 19 Sample # 9, (50 sec @ 50 cc/min) = 10126nA = 2.258 mg/m3.
- 20 Begin Trial # 1 @ 2.258 mg/m3 and 90% RH
- 21 Sample # 10, (8 sec @ 20 cc/min) = 3238 nA = 10.39 mg/m3.
- 22 Sample # 11, (8 sec @ 20 cc/min) = 8126 nA = 2860 mg/m3.
- 23 Sample # 12, (8 sec @ 20 cc/min) = 10349 nA = 36 mg/m3.
- 24 Begin Trial # 1 @ 36 mg/m3
- 25 Sample # 13, (8 sec @ 20 cc/min) = 9892 nA = 34 mg/m3.
- 26 Begin Trial # 2 @ 34 mg/m3
- 27 Sample # 14, (8 sec @ 20 cc/min) = 15006 nA =52.917 mg/m3.
- 28 Begin Trial # 3 @ 52.917 mg/m3

}	ID General	tor Settings	
agent =	.25 cc/m	gen temp =	20.0 C
ory asr ≖	0.0 l/m	gen RH ≠	0 %
wet a⊮ =	3.0 Vm	amb temp =	
act terro =	20 C	amb RH =	90 %

980807HD.XLS - Page 1 of 1

Printed: 8/7/98

Operator____

Operator____

Data Entry 'm Purpose on ,120+

Data Entry 'm	ا ع			Doto:		0,0,0						page 6
Furpose of les	ا ان		-	Date.		Operator.						
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									Clean			
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-	dat/sig					time	class/id/conc		time			
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		(1,1,1)	Hcmt Squak				ALS MED		. :			
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141501	DAT	7.13	Awa Ain							Lhw	970 206-05	
		7:25	Heunt Saule				ALS MED					
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LOG1.WB1 update 11 Jun 97	date 1	1 Jun 97								-		

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Purpose or test:	sst		Test Location:	Date:		Operator:				
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		17: 25:30		٥٠.١	88%	38	5	20	<u>p</u>	
										13:45 radio UX cone
Totity	DAT	\$ 2	Pay Arn							17:50 W come Oil (30%C)
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	dat/sig						class/id/conc		time		
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		54:21	Cley an	*							
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Page O

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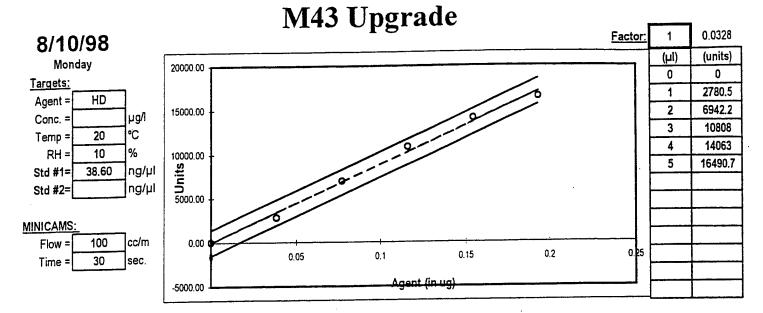
7 23 4 970 206-05 9802000 E h W アイゴ Comment Clean Alarm Alarm Chalng down time class/id/conc time time Temp: 727 NRV MED BLS MED ALS ALCO NRV MED 70 35) Operator: Conc(mg %Rh 8/2/28 Date: Heurt Suyle Gen & Sayl H cut Sayl Awa Ain Run AiR SWver#: 502 is Test Location: ERDEC Sample 7:15 7:26 end LOG1:WB1_update_11¹Jun_97 7:12 7.13 1:11 D47 7:10 Type Time dat/sig DAT Cont Chels Purpose of test: Dett. 247 105141 704/41 DataFile#

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أند	Erahat	790	**	dat/sig	ノな				516	DA7			 514					
Purpose of test:	Lost Es	0%	# h	Datar lie#	704155				704156	705/55 DAT			105156					



Project: Provide GD, GB, GA, VX, and HD to contractor to set windows

Oper

NOTES:

1 Set agent generator for HD @ 52 C and ~25% RH.

2 Run Standard curve using HD @ 38.6 ng/ul.

1	2780.5
2	6942.2
3	10808
4	14063
5	16490.7

- 3 Sample # 1, 30 sec @ 100 cc/min = 14949.7 nA = 3.38 mg/m3.
- 4 Decrease agent concentration.
- 5 Sample # 2, 30 sec @ 100 cc/min = 8589.1 nA = 1.95 mg/m3.
- 6 Sample # 2, 30 sec @ 100 cc/min = 8759.5 nA = 1.99 mg/m3.
- 7 Sample # 3, 30 sec @ 100 cc/min = 9092.5 nA = 2.06 mg/m3.
- 8 Begin trail # 1 @ 2.06 mg/m3

HC) Genera	tor Setting	ıs
agent =	200 cc/m	gen temp =	20 C
dry air =	2.25 l/m	gen RH =	25 %
wet air =	0.75 l/m	mb temp =	18 C
agt temp =	20 C	amb RH =	0 %

Operator_

Operator_

page 1 of Data Entry Form

urpose of test:		Test Location:	Date:	Operator			_		bage 1 of	ايي
Cont Cheer,	-30°C		35/1/3	707	2020-		-	762 (1) (10) Lord		
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Data Filo#	Time	Commo	10/2	-						
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380206-05										
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1 Axis	. imo.					_				

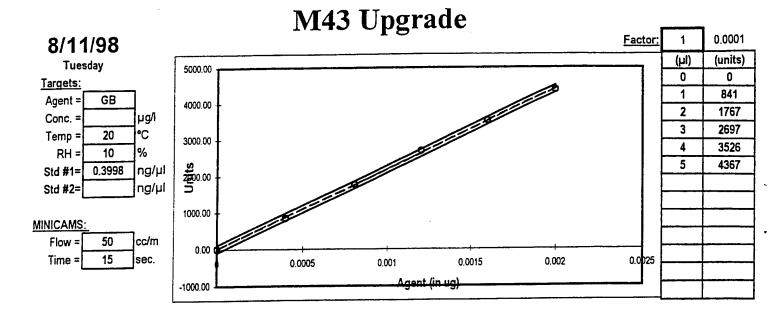
Purpose of test:	-	(-7.00)	Test Location:	Date:		Operator	Jr.			-
EZVI	_	7	EPUEC	26)»/8	20					
Det#: 9702/6-07	10-97		SWver#: 502.8				Temp:			
DataFile#	Туре	Time	Sample	Conc(mg	%Rh	Alarm	Alarm	Chalng	Clean	Comment
	dat/sig						d/conc	1	time	
25170	D/47		C1: c1:1							PK
	. !	1		0,112			North	09		ر ک
(1.2.1.)	Din	Din Hith From	in Aet-or	wing Lit for	* fc	/a:5				alaka atter venus april
		13; 18: 4	7 7			\	Colore	300		Mar line along (12, 6
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To4159	3/15	85.cl	0 GB	O.107		7	iller Low	(7	25	
`		ડ જ(\ \	7) GU			1.7	War Law		70	
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			=							
LOG1.WB1Tupdate_11Jun_97	pdate_1	1 ¹ Jun ⁻ 97					,			

Data Entry Form Purpose of test

<u> </u>	Test Location:	Date:	1	Character				bage
		7/1.10F			0.767			
1 20	SWver#: SULIS				Temp:			
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	aldina				d/conc	time	time	Collinean
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(_X D; c)	Z	111.0	-	% X	nier cad		72	date in the rough det
	D-0			S	(NRUCAIN)		74	dely now the
							3	13.55 Con Cot 0 104
(13:55 1)	7-Y	O. 144		4	NRV how		12	
	_			B	INV lan		=	
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Purpose of feet			Test I ocation:	Date:	1	Operator				- hand	5
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Check-in	K) 15	13		8/11/5F	بخ						
Det#:			SWver#:				Temp:				
-					l i			1	Ħ		
DataFile#	Type In	Time	Sample	Conc(mg %Rh		Alarm /	Alarm Chalng			Comment	
i	avsig						ciass/id/conc		alle me		\neg
MANNE I	t)// 1/	11.27	-60								
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ZA, Sa.	74.11 600	(,	Chal and							13%C	
1	# · ·	4	را ال				Char Gas				
	#3 	12:71:11	5-3			787	War Lin	ا جن	رما	-10°C (-11°C)	
	3	01:11:13	A. C.								<u> </u>
	3	92111111)	:						-		1
	27	12,59,11	i				MAL				
7 Avtour	747	4:3	N. C.							chite Ltd - or & mitable	T
	#	11-22-21	1.							WHAM LIGHT LE TECTURE	_
		装	I	ŗ.		0,0	ish ten				
	<u> </u>	[[:153.7]	C-B/Jillery	Ċ.		\$	4				
	11	c(11)	M.A)								
	2	1117.3	l	٦.		i.	NWE	60	١		
	3	(4,1)	26	c`			(Aleman				
	<u>u</u>	57.35.C									
	じ	n: (6/2)									
pu											
LOG1.WB1.update 11'Jun 97	late 11 Ju	un 97]



Project: Provide GD, GB, GA, VX, and HD to contractor to set windows

Oper NOTES:

1 Set agent generator for GB @ -30 C.

2 Run Standard curve using GB @ .3998 ng/ul.

		log file
1	841	0633
2	1767	638
3	2697	642
4	3526	647
5	4367	652

GE	Genera	tor Setting	S
agent =	cc/m	gen temp =	С
dry air =	3.00 l/m	gen RH =	25 %
wet air =	0.00 l/m	mb temp =	18 C
agt temp =	20 C	amb RH =	0 %

- 3 Intellitec and MSS detectors were taken out of hood for repairment
- 4 Sample # 1, 15 sec @ 50 cc/min = 3094 nA = .112 mg/m3

Logfile = 1204

- 5 Start test on ETG Detectors @ .112 mg/m3
- 6 Sample # 2, 15 sec @ 50 cc/min = 3559 nA = .129 mg/m3

Logfile = 1232

- 7 Lower agent concentration
- 8 Sample # 3, 15 sec @ 50 cc/min = 2857 nA = .104 mg/m3

Logfile = 1250

- 9 Trail # 2, @ .104 mg/m3.
- 10 Start test on Intellitec Detectors @ .104 mg/m3

Operator_____

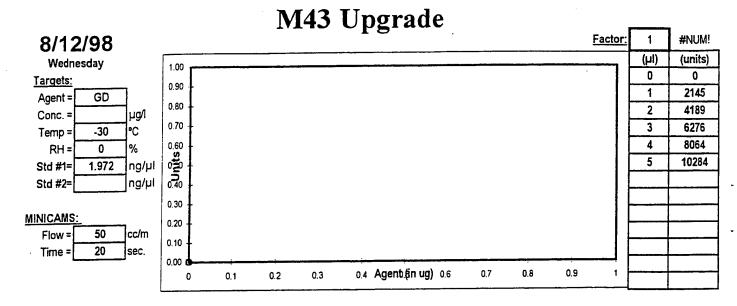
Operator_____

Detector S/N	980206 - 4 Date: _	8-12-98	
Software Ver.		08:40	
Location:	ERDEC E 3510		
1. Initial Powe	er On		
A.	Uncap the air inlet and air exhaust. Place	ce charcoal filter ov	ver the inlet.
B.	Connect communication cable and begin	n "Logall" file.	
	Record datafile name	DAT	
C.	Turn horn volume to full (clockwise)	*	
D.	Connect power and begin stopwatch.		
E.	Verify startup sequence.		
		Pass	Fail
Display shows	s M43-APD		
Display shows	s the Software Version		
Display shows	LED TEST followed by test patterns		
Display shows	HORNTEST and horn beeps twice	<u>/</u>	-
Display shows	SELFTEST	_	
Display shows	STANDBY and backflush begins		
Display shows	READY within 30 minutes after startup		8:42:42
Record	Time 2:38	_	8:40:12
Display goes b	plank approx. 15 seconds after READY		2:34
Tested by:	Mesaver	Date	8-12-98

Detector S/N	980206-5 Date	: <u>8-12-</u>	98	
Software Ver	5 . 2 8 - / Tim	e: <i>08.5</i>	<u>o</u> .	
Location:	ERDEC 3510			
1. Initial Pow	er On			
A.	Uncap the air inlet and air exhaust	Place charcoal filt	ter over the inlet.	
B.	Connect communication cable and	begin "Logall" file	•	
	Record datafile name 70516 (Attach copy of data with test reco			
C.	Turn horn volume to full (clockwis	se)		
D.	Connect power and begin stopwate	eh.		
E.	Verify startup sequence.			,
		Pass	Fail	
Display shows	s M43-APD	_		
Display shows	s the Software Version	_		
Display shows	LED TEST followed by test patter			
Display shows	HORNTEST and horn beeps twice			
Display shows	SELFTEST	_		
Display shows	STANDBY and backflush begins			
Display shows	READY within 30 minutes after st			8:51:13
Record	Time 2:38			8:49:04
Display goes b	plank approx. 15 seconds after REA	DY _		2:09
Tested by:	It Deaves	Date	8-12-	98

page l of l

Det#: 980206	ייים אינים א		Test Location:	Date:	2	Operator				
Det#: 9801.	Evaluation	ation	ERDEC 350	8-12-	<i>y</i>	Me	18 E			
#ゲイ	- 90		SWver#:			_	Temp: - 30	۲,		
	ካ		5.028-1			j			Clean	
1	Type	Time	Sample	Conc(mg %Rh		Alarm A	Alarm	ng		Comment
	dat/sig				=		class/id/conc time		time	
704160	DAT	8:40	STARTUP							Detector have been
105160	DAT	8:50	STARTUR							shit down of wood off
										A
104161	746	11:6	C-AIR							Colispus tests
		9:12	H CONF			l	BLS MED NRV LOW	7	1	0
		9.15	G CONF			1	WRVLOW	7	l	
705161	245	31:6	C-AIR				815 HED	×		
		9:19	H-COUF			1	BLS MED NRV LOW	2	(
		9:22	G-CONF			(NRVLOW	7	l	
704162	DAT	9:58	60	7//	0	16	NRVLOW	91	25	!
705/62	245	10:01	60	411.	0	7	NRVLOW	7	25	
704163	514	60:01	Ø-AIR							
		10:08	GD	. 114	0	12	NRVLOW	12	33	
705163	216	10:01	1-AIR							
		10:10	60	۲11,	送。	17	NRVLOW	7	44	
704164	DAT	10:12	60	411,	0	41	NRVLOW	41	2.5	
end										



Log File = 0728

Log File = 0759

Log File = 0958

Log File = 1027

Log File = 1027

Log File = 1439

Project: Provide GD, GB, GA, VX, and HD to contractor to set windows

Operators: Juan & Sonny

NOTES:

1 Set agent generator for GD @ -30 C.

2 Run Standard curve using GD @ 1.972 ng/ul.

	T	LogFile
1	2145	0623
2	4189	0628
3	6276	0632
4	8064	0637
5	10284	0641

GD	Genera	tor Setting	js
agent =	.03 cc/m	gen temp =	-30 C
dry air =	3.00 l/m	gen RH =	0 %
wet air =	0.00 l/m	mb temp =	20 C
agt temp =	0 C	amb RH =	0 %

- 3 Sample # 1, 20 sec @ 100 cc/min= 1053 nA = .029 mg/m3
- 4 Increase agent concentration
- 5 Sample # 2, 20 sec @ 100 cc/min= 3599 nA = .103 mg/m3
- 6 Sample # 3, 20 sec @ 100 cc/min= 3983 nA = .114 mg/m3
- 7 Begin Trail # 1 @ .114 mg/m3 for ETG detectors.
- 8 Sample # 4, 20 sec @ 100 cc/min= 4428 nA = .127 mg/m3
- 9 Lower agent flow:
- agent = .08 cc/m
- 10 Begin Trail # 1 for MSS & Intellitec.
- 11 Sample # 5, 20 sec @ 100 cc/min= 4493 nA = .129 mg/m3
- 12 Sample # 6, 20 sec @ 100 cc/min= 9991 nA = .288 mg/m3
- 13 Set agent generator for GB @ -30C.

14

1	841
2	1767
3	2697
4	3526
5	4367

- 15 Sample #7, 20 sec @ 100 cc/min= 5857 nA = .160 mg/m3
- 16 Test Intellitec and MSS detectors.

Operator_____

Operator_____

980812gd - Page 1 of 1 Printed: 8/13/98

Detector S/N	1 _ 980206-04 I	Date: 8/13/58	
Software Ve	er. M5025	Time: 8:24	
Location:	EPHOEC-BUG 3513	+57	ي د
1. Initial Po	wer On		
A.	Uncap the air inlet and air exha	ust. Place charcoal filt	er over the inlet.
В.	Connect communication cable	and begin "Logall" file	·
	Record datafile name		
C.	Turn horn volume to full (clock	(wise)	
D.	Connect power and begin stopy	watch.	
E.	Verify startup sequence.		
		Pass	Fail
Display sho	ws M43-APD	<u>~</u>	
Display sho	ws the Software Version		
Display sho	ws LED TEST followed by test pa	atterns	
Display sho	ws HORNTEST and horn beeps to	wice	
Display sho	ws SELFTEST	<u> </u>	
Display sho	ws STANDBY and backflush beg	ins <u>√</u>	
• •	ws READY within 30 minutes aft	er startup	
	ord Time 5!, 40		
Display goe	s blank approx. 15 seconds after R	EADY	
Tested by:	G. Loza	Date	6/13/50

	•			
Detector S/N	986266-05	Date:	8/12/58	
Software Ver.	110 5-28	Time:	8:35	8:52
Location:	ERDEC-BLGJ510			452 K
1. Initial Powe	er On			
A.	Uncap the air inlet and air ex	khaust. Place ch	arcoal filter ov	er the inlet.
B.	Connect communication cab	le and begin "L	ogall" file.	
	Record datafile name <u>Jo</u> (Attach copy of data with tes			
C.	Turn horn volume to full (cle	ockwise)		
D.	Connect power and begin sto	pwatch.		
E.	Verify startup sequence.			
			Pass	Fail
Display shows	s M43-APD			
Display shows	the Software Version		$\overline{}$	<u></u>
Display shows	LED TEST followed by test	patterns	<u> </u>	
Display shows	HORNTEST and horn beeps	twice	<u> </u>	
Display shows	SELFTEST		<u> </u>	
Display shows	STANDBY and backflush be	egins	<u>_</u>	
Display shows	READY within 30 minutes a	after startup		
Record	Time 3 !SV		,	
Display goes b	lank approx. 15 seconds after	READY		
Tested by:	G. Lozes		Date	8/11/98 8:52

Entry Form	-	٠					•	bage [ام
test:	Te	Test Location:	Date:	Operator:					
									T

4524 ERDEC 8 12/58 SWVERF. SVLB SWVERF. SVLB SWVERF. SVLB SAT E: 24 SCANE-4 6:37 4 6:37 4 6:37 4 6:39 Charle Ain 3) H cut 4 C sull 5) ', 8:56 Hant Sayle 8:57 Hait Sayle 8:57 Hait Sayle 7:01 Gear	Purpose of test:			Test Location:	Date:	Operator:				
Sumple Survey Su	کتحرر- د ا		+52x	EADEC	35/c1/8	407	-د/ /			
Type Time Sample Concing %Rh Alam Alam Chaing down Comment	et#:				-	F	emp:		Challer	2/
17 14 14 14 14 14 14 14						_				
6.3r H-C. 15chr. 10 Nhy 3	ataFile#	Type dat/sig	Time		Conc(mg %Rh		larm ass/id/conc 1	ng		
6.3r H-Cat Sale (Nuc 3) 6.3r H-Cat Sale (Nuc 3) 6.31 (4) [Nuc 4) 6.39 (-cat Sale (Nuc 4) 3) H-Cart A is (Nuc 4) 5) ', (Nuc 4) 5) ', (Nuc 4) 6.30 (Sear Nuc 4) 7.01 (Sear Nuc 4) 8.55 Heart Sale (Nuc 2) 8.56 Heart Sale (Nuc 2) 8.57 Heart Sale (Nuc 2) 8.50 (Sear Nuc 4) 8.50 (Sear Nuc 6) 8.50 (Sear Nu	59 140	DAZ		SEANE-LP						7254
H = Ci, t sult										
H			8.35	HCW15			(No.	7		
(14 (14 (14 (15)) (15 charles Rich (15 charles Rich (15 charles Rich (15 charles Rich (16 charles Rich (17 charles Rich (18 c			£:37	7			13/2)	5		
Gratsall Merlan Gratsall Merlan Gratsall Merlan			8:26	†)			747	0)		
1) Charle Ain 2) Charle Ain 3) Charle Ain 4 (- S. Ma 4 (- S. Ma 7) 1. 1) H Cont 7 1. 1) H Cont 8 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			8.39	Grant Sul			VRV Len			
9 Chank Air 1 H Cent 1 George Sign Lur Cown - Re-Yail 1 George Sign	704166	Sak	· •							
H cut Nav & 2 Lur Cum - Re-Ymil Nav & 2 Red 3:50 & 55:53 - Red 5:40 Nav & 3 Red Mark 10 Red 6:55:54 Ccur Nav & 2 Ccur Nav & 2 Ccur Nav & 10 Nav & 2 Ccur Nav & 10 Nav & 1			2							
(- sulle Nav len 2 Lur Cum - Re-Kin! 1,			JC.				1			
1 '1 Stant-up Hant Sayle Geal 3:50 (8:55:53 - Hant Sayle Nor 10 Nor 2 Grant Count Count Count Count Count Nor 10			<u>ت</u>				Nav Ger	7	Coum -	(fr, t
- Stanfurp Haut Sank Haut Sank Crew Crew Crew Crew Nowe 2 Nowe 2 Crew Nowe 2 Nowe 2 Nowe 2 Crew Nowe 10 Nowe 10 Nowe 10 Crew Crew Nowe 10			5)				No. 4	7		
Heint Sanke Mare 3 Heint Sanke Name 2 Grewn Name 2 Grewn Name 2 Count Grey 13	Tos /65	-	8,52						(leaf 3:50 (1
Hart Sayle Max Hart Sayle Crew Gear Crew Crew Crew Mure Nore			•							
Hait Save Nac Gear Gear Gear Gear			8:58	HenTsanle			None	7		
Gent Gent Note			8:54	Hart Salo			Z	0,		
George And Marker 1) Church And			10:6	Gent			Nue	2		
SIV 1) Charle An Males			20.16				を記れ	بم		
1) Chuch And			56	3			NRC lear	c1		
	758766 and	515		Charle And			Mar	l o		

page 2 of								0.12)					ļ						
				Comment				11:01 OFFINE 0.1											
			Clean	down	time		20	20		20	20		20	20				23	
				ng			20	(ه)		23	97		(120	7		21.3%		*/	
	5020	Temp:		Alarm	class/id/conc time		War ten	Mar Lin		(NA Low	chertu		(NRV Con	Nr La		((NRV Low	
Operator:	37		,	Alarm /	 i		22	19		٥2	٧)		(i,ro	7	·	(ナ	
			1				767.												 _
Date:	36/01/3			Conc(mg %Rh		+52%	121.0	0.125		521.0	0.121		0.126	0.179		0.118		Ö. 118	
Test Location:		SWVer#1502B		Sample		Charle Air	ST.PO	215		S-I	9-B	Clta, Aik		GD		0-0	an	৬	
<u> -</u>	152cc	S		Time			1.3.4 1.4.3.4	05:01		06:50:11	2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	13,44	94:21	در:۲ <i>۱</i>	04구 (남)	4City	DAT (4:34	82:3Eik)	
د. اے	i	75.5	 	Type	dat/sig	DAT		31,5	DAT			DAT		211	047		047		
Data Entry Form	(25)	Det#: 950206-07	:	DataFile#		704167		To4168	704169			764170		121167	70×17		Toy (73		

	<u>- </u>	Test Location:	Date:	:	Operator:				
75254		ERDEL	15/11/2	7	7	1020			
Det#: 950 201-45	တ	SWver#:				Temp:	-		
			7000	40,0		Alexand		Clean	1
dat/sig		Sample	Conc(mg %kn	%KII	Alarm	class/id/conc time	<u>D</u>	down	Comment
KT:1 LV0	7	Clean Rik	+574						
54.01	45	71 13	0.121	767.	2,	MRV LOW	17	2,	
7)S	7.	(1-13	0.14		20	(YRV Len	10	23	(1:4) G-15 Cm 0.125
						,			
DAT IL	do:)]	cley Ack							
	13:25 II	S-B	0.125		20	lyter Law	cı	07	
(C)	32:21(1)	<i>∑-Q</i>	0.125		7	MAC LOW	(ه	72	
DA7 (3)	77.0	Clay Ain							
17:50	ટ	Ĵ	921.0		∞	MA Can	۵	3	
7/14/1 7/5	٦ /	6-0	0.129		é	NRV Lun	8	7	
0AT (4:27	11	C(con AIR			•				
せ	87:41	G.S	0.118		۵	NKU Lan	ما	20	
PAT 14	96(4)	Ach							
	14:77:77	(2)	D.117		مثا	IND CL	صا	7	(on wax letaki
_									

page O of A Check at agat 3 ran Comment Clean Conc(mg %Rh Alarm Alarm Chaing down time class/id/conc time time NR Co (None Temp: (2007) Operator: Date: \(\sigma\) \(\sigma\) \(\sigma\) \(\sigma\) \(\sigma\) \(\sigma\) 5 **~** . • +524 EPOR (J-10 B 17 CENT 4 e b 6-0 SWver#: SP Sample 9:29:17 のブンク (3:05 17:27 end Lorat WB1 กที่สัย 11 กฤษ 97 رس:() 9.7 TOKING- 10AT 9:11 Time 10.6 Dan Violini
Purpose of test:

(5-16
E-76-1
Det#: 97026-04 Type dat/sig OAT-DAT DAT TAOS ONG (AUTE) DataFile# 77\04 cc.6

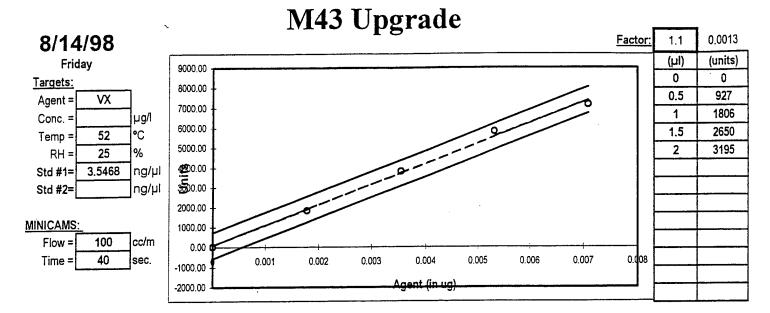
Detector S/N	<u>980206-9</u> D	ate:	8-19-98	
Software Ver.	<u>5.028-/</u> T	ime:	08:26	4.00.100004400
Location: <u></u>	ERDEC E3510	TEMP	+52°C	FOLLOUINE
1. Initial Powe	er On	/5	7-HR SH	47.DO WN
A.	Uncap the air inlet and air exhau	ust. Place c	harcoal filter o	ver the inlet.
B.	Connect communication cable a	-		
	Record datafile name		9 7	
C.	Turn horn volume to full (clock	wise)		
D.	Connect power and begin stopw	atch.		
E.	Verify startup sequence.			,
			Pass	Fail
Display shows	s M43-APD			
Display shows	s the Software Version			
Display shows	LED TEST followed by test pat	terns		
Display shows	HORNTEST and horn beeps tw	rice		
Display shows	SELFTEST			
Display shows	STANDBY and backflush begin	ns	1	and the second s
Display shows	READY within 30 minutes afte	r startup		
Record	Time 2:52		_	
Display goes b	olank approx. 15 seconds after RI	EADY		
Tested by:	Herry		Date	8/14/98

Detector S/N	980206-5	Date:	8-14-98	5
Software Ver	5.028-1	Time:	08:34	
Location:	ERDEL E3510			
1. Initial Pow	er On			
A.	Uncap the air inlet and air ex	haust. Place cl	narcoal filter o	ver the inlet.
B.	Connect communication cabl	e and begin "L	ogall" file.	
	Record datafile name		7	
C.	Turn horn volume to full (clo	ckwise)		
D.	Connect power and begin stop	pwatch.		
E.	Verify startup sequence.			
			Pass	Fail
Display shows	: M43-APD			
Display shows	the Software Version			
Display shows	LED TEST followed by test p	oatterns		
Display shows	HORNTEST and horn beeps	twice	_	
Display shows	SELFTEST		<u> </u>	
Display shows	STANDBY and backflush beg	gins		
Display shows	READY within 30 minutes af	ter startup	~	
Record	Time 3:58			
Display goes b	lank approx. 15 seconds after	READY		
rested by:	It Veave		Date	8/14/48

Purpose of test:	Purpose of test:		Test Location:	Date:	Operator:	Jr.			
Lost. evaluation	valu	ation	ERDEC 3510	8-14-88		HEIR			CHAMBER HYMIDITY APPROX
Det#: #5 4 #4	1#1		SWver#:			Temp: +52	2,		•
			028-1						
DataFile#	Type	Time	Sample	Conc(mg %Rh	_	Alarm	g		Comment
	dat/sig				time	class/id/conc time		time	
TO4174 DAT 8826	DAT	6826	STARTUP						
704175	316	316 0830	N-418						YMIN. AFTER STARTUP
105194	DAT	0834	STARTUR						
705175	516	514-0840	C-AIR						6 MIN. AFTER STARTUR
704176	3A T	9480	6-41R						-CODE, TESTS
		0850	C-A1R						
705176	24T								
)		+							Auto Can
704177	DAT	6				No ALM	7		
		432;18	H- Go!			No hom	ک		
		9:33:30				200 from	~		
						No ham	7		
705177	740	9:34:33	3 H-GUE)			Nostow	کم		
						· ·			
					\propto	Spesion	W		
		9:32:43	3 K- CONF		72	WRULOW	2		
	_			_					

page 2 of 7

page 2 c																	
				. Comment			~		9		9	/	و				
			Clean	$\overline{}$	=		ار مر		15 26		6 20	30 3	19 26				
	LEVEN	Temp: + 52 ℃		Alarm Chalng	class/id/conc tin		MRVLAN		NRVLOW		NRVLOW	NRVLOW	NRVLOW				
Operator	7		_	Alarm /	alline	ł	Ø		15		و	30	61				
	-56			준	6/5	6	2610		26		276	276	26				
Date:	3			Conc(mg %	0 2 0		.655		.055		.055	.055	,055				
Test Location:		SWver#:	5.628-1	Sample	× 2	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	×	CLEAN AIR	VX	CLEBY ANR	V_X	٧X	ΛX				
			T	ıme	0.0	90.7	10.01	10:20	12:01	10:37	10:38	10:39	10:58				
E ti	Jalua	Ŋ		l ype	Sign of the second		189	216	·	546		DAT	247				
Data Entry Form Purpose of test:	Host walester	Det#: 4 * S	i	Datar lie#	700,00	1 .	811501	704179		705179		104180	705180				pue



Project: Provide GD, GB, GA, VX, and HD to contractor to set windows

Operators: Terri, Juan, Sonny & Kwok

NOTES:

1 Set agent generator for VX @ 52C and 25 % RH.

2 Run standard curve with VX @ 3.5468 ng/ul.

		Log file
0.5	927	815
1	1806	822
1.5	2650	829
2	3195	835

3 Sample # 1, 40 sec @ 100 cc/min = 1056 = .030 ug/l ???

4 Sample # 2, 40 sec @ 100 cc/min = 1817 = .055 ug/l log = 0955

5 Testing detectors

6 Sample # 3, 40 sec @ 100 cc/min = 1833 = .055 ug/l log = 1115

V	(Genera	tor Setting	js
agent =	110 cc/m	gen temp =	52.0 C
dry air =	2.10 l/m	gen RH =	26 %
wet air =	1.00 l/m	mb temp =	20 C
agt temp =	35 C	amb RH =	82 %

Operator_____

Operator_____

Startup Test Checklist and Test Data Sheet

Detector S/N	980206-4	Date:	8-17-98	· .	
Software Ver	. <u>5.02B-1</u>	Time:	?:05		
Location:	ERDEC E3510	TEMP: _	0°C @	STARTUP.	
		POWER	OFF @	8-14 11:30 +	5
1. Initial Pow	er On			DAYS AT +	
A.	Uncap the air inlet and air ex				
В.	Connect communication cabl	le and begin "	Logall" file.		
	Record datafile name		. DAT		
C.	Turn horn volume to full (clo	ckwise)			
D.	Connect power and begin sto	pwatch.			
E.	Verify startup sequence.				
			Pass	Fail	
Display shows	s M43-APD		<u> </u>		
Display shows	s the Software Version		<u> </u>		
Display shows	LED TEST followed by test j	patterns	<u> </u>		
Display shows	HORNTEST and horn beeps	twice	<u>~</u>		
Display shows	SELFTEST		<u>v</u>	-	
Display shows	STANDBY and backflush be	gins	<u> </u>		
Display shows	READY within 30 minutes a	fter startup			
Record	Time 2:50	-			
Display goes b	lank approx. 15 seconds after	READY	<u> </u>		
Tested by:	G. Lozus		Date	8/17/98	

Startup Test Checklist and Test Data Sheet

Detector S/N	980206-5 Date	8-17-9	· F
Software Ver	. <u>5.028-1</u> Time	: [3]10	
Location: _	ERDEL E3510 T	EMP: 0°C	@ STARTUP
1. Initial Pow	rer On 5 T	ORED FOR	14 11:30 + 52°C 3 DAYS AT +25°C
A.	Uncap the air inlet and air exhaust.	Place charcoal filter	5.5 HR COLD SOAK r over the inlet.
B.	Connect communication cable and	begin "Logall" file.	
	Record datafile name		
C.	Turn horn volume to full (clockwis	e)	
D.	Connect power and begin stopwatch	ı.	
E.	Verify startup sequence.		
		Pass	Fail
Display show	s M43-APD	<u> </u>	
Display show	s the Software Version		
Display show	s LED TEST followed by test pattern		
Display show	s HORNTEST and horn beeps twice		
Display show	s SELFTEST		
Display show	s STANDBY and backflush begins		
Display show	s READY within 30 minutes after sta	ertup <u>~</u>	
Record	d Time		
Display goes	blank approx. 15 seconds after REAI	Y <u>~</u>	
Tested by:	6. Lo Zu	Date	8/17/98

* 15 + 5 1° 7,9+ page] 40-902036 30-902035 357/25 130 c6] 348/267 につい 下フトコ Comment cr:/ 27:0 72:00 Conc(mg %Rh Alarm Alarm Chalng down time class/id/conc time time NAV PPET) משע לאט MAN BAN DLS A. Temp: SOT 07 Operator: 2 Ś 0% 16/41/8 ر ار 200 Date: (4 cm. 1. 54/1) SWVer#:502B Test Location: H cm+ らられ Sample ロピ しいれい crisical 17:14 90 13.68 Time Type dat/sig 047 DAJ Data Entry Form Purpose of test: Start-y 1202/81 DataFile# 18/20/ Det#:

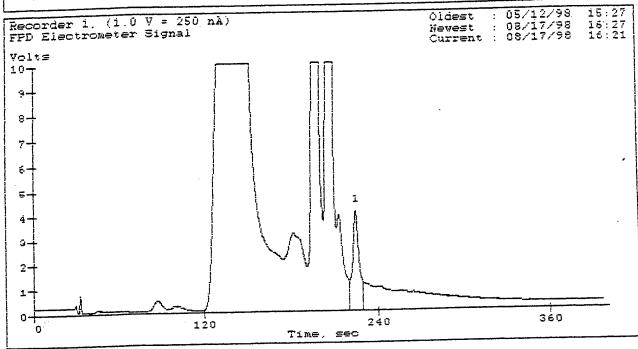
end Fogt.wB1 update 11 Jun 97

2, 6 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	Data critis roun	Ξ +		Test I ocation:	Date:		Operator:				
Sweeth NSVIS Time Sample Conctong %8th Alam Alam Conment Conctong %8th Alam Alam Conment Conctong %8th Alam Alam Conment Conctong %8th Alam Alam Conctong & C	0±		り、こ		2		107	ξαζ			
184 Type Time Sample Conclug 9/8 h Alam Alam Chain Global Glob				SWver#: MSVL	•		L	emp:			
Type Time Sample Concling %Rh Alam Alam Alam Charleg Gow Charleg Cha							-			Slean	
13.50 0°C 6°0		Type	Time	Sample	Conc(mg %	_		lass/id/conc t	ng	Jown	Comment
13.51 Clean Aigh 2.6 7 Ais red 7 So 13.52 Hd	1	DA7				1 1					7,1,5
13.57				clean Ain							•
13.54 14.56 14.60 1.6 15.6 14.7 15.54 15.54 15.54 15.54 15.54 15.54 15.54 15.55 15.54 15.55 15.54 15.55 15.54 15.55 15.54 15.55 15.54 15.55			12:51	0.H	2.6		ŗ		۲	So	
DMT 13:54			30:41	Cls. A.R. (+0	٦, ٦		و		و	47	7,97
(45) Clu, A, A A A A A A A A A	72185	DAT									
7 Sic (4:10) HD 2.6 7 Ais con 7 45 7 Sic (4:10) HD [-93] S Ais con 7 45 8 Sic (4:10) HD [-93] S Ais con 7 45 1 DAT (4:10) (1cc, Air (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)				Clay AM							3,1,4
3 Sie 14:10 Hb 1-93 S 066			14:02	7	2.6		7	1 1	7	<u>ب</u>	
3 SIL (4:10) HD 1.43 S 066 6m S 33 5 IL (2m) S (11 6m) S (11 6m) S (11 6m) S (11 6m) 1 DAT (4:42) (1.43) (1.43) (1.43) (1.41) HD (2m) IV; SD 1 U; YY, M HO 1.43 11 ML 6m IV; SD HD (2m) IV; SD 1 Update II Jun 97 II Update II Jun 97 III Update II Update										;	
511- W37 HD (-93 S AL law 5 47 511- W37 HD (-93 S AL law 5 47 DA7 14,43 (16 1.93 11 AL law 11 28 HD Can 14:50 14.44,44 (40 1.93 11 AL law 11 28	Tos 183	315		HD	[-93		Ņ	165 len	5	33	
SILL NET7 HD (-53 5 ALL lew 5 47 DAT IV.45 (Ica, Ali M It It It HD Lew 145 Lew IV I W: YY.14 (HO I.93 It It HD Lew IV SO I update 11 Jun 97 II II II II II II IV IV <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>											
DA7 14;45 (1cm, Aik 11 11 11 12 thm 11, 28 HD Cm, 14:50 14;5	194183	\$1.5		4	(-93		S	OLS law	5	47	
(1 ms cm 1, 28 HO 14:50											
14 (40 1.93 11 Ms un 11 28 HO cm 14:50	T05/84	047									
end bodate 11 Jun 97					1.93		11)	MLS Lew	ر	28	14:50
end LOG1.WB1 update 11 Jun 97											
end LOG1.WB1 update 11 Jun 97											
end LOGT.WB1 update 11 Jun 97										-	
end LOG1.WB1 update 11 Jun 97											
LOG1:WB1 update 11 Jun 97	, to										
	LOG1.WB1	update	11 Jun 97								

page of 3 Data Entry Form Purpose of test

Data Citting Form	E },		Test Location:	Date:		Operator:			
	3	3,0		85/41/2		70	1020 F		Cu puzek
Det#:			SWVer#: Solf				Temp:	neal	
DataFile#	Type	Time	Sample	Conc(mg %Rh	- 1 1		Alarm Chalng	down	Comment
	dat/sig					time	class/id/conc	ime	
704185	DAT	<i>لاننا</i>	دادر منه						
	•	(6)00,10		O.026			MRC		Lypuyed VX
Tusins	DA-7	16:12	Clean Ain						
		16:12:4	X	0.02			Mar fa		Un puya LK
									•
1									
1 nG1.WR1 update 11 Jun 97	npdate	11 Jun 97							

				STATION 1
S/N 3043	3	08/17/98	16:21	SIRILVII I
61	VX(FPD)			
TWAG	5.60 1			
HEIGHT	720 224.7			
R.TIME WIDTH	3.4			H = Help



Monitor Serial Number 3043

Date 08/17/98

Sampling Station 1

Time

ŲΧ

TWAG

Data Entry Form Purpose of test:	نناع		Test Location:	Date:		Operator:	ï			page of
Host walustion	lati	ı	ERDEC E3510	8-18	-98	178	Mer			
Det#: 980206 -	9		SWver#:				Temp: 0°C			
5#41#	1		8-1		1 1	7			Clean	
DataFile#		Time	Sample	Conc(mg %Rh		_	Alarm	<u>p</u>	down	Comment
	dat/sig		,			time	class/id/conc time		time	
704186	201	0835	CHAMBER AIR)ر					Detector land been running
704187	<i>9</i> /2	9 2 9 9	CHAMBE R		17					R
1.		0 0 4 4	CHANBER		1,7					8
105186	247	247 0837	AIR		:					Chamber @ O.C. Chubrent
705187	316	1480	CHAMBER AIR		1/					Clauber humidit is 63%
281401	DAT	4480	H Cann		7	ı	813 mED	7	1	
		0845	G CODF		11	ı	WAY LOU	4	l	
705188	780	8480	H CONF		7,1	I	BLS MED	2	1	
		0852	G CONF		11		NRVLOW	2	{	
704189	DA7	0927	Coxo.		200					
ŧ			. ×/	0.09	0	1:27	NRV LOW	727	22	CONCENTRATION UNHAVORA
TOS189 DAT	140	4001	CONSAIR		1					
		5001	ν×	60.0	a	0:37	MRV LOW	0:37	6:23	
704190	216	10:25	VX	6.00	0	1:23	1:23 NRV LOW	1:38	0:23	ANDCAL (2 t= 1 mins into CHALLARKE
705190	516	51610:54	٧×	0.07	0	0:48	NRVLOW	0:48	22:0	
161401	JAT	01:11								ALLTOCAL - POS RX SHIFTS WHEN
		11:10:43	× /	0.07	0	64:0	MRVIOUS	6:44	0:23	CONDITIONED AIR IS PUT OU
705191	780	11:31	CONSAIR		1					
end32	•	11:32	٧X	0.07	0	PI: 0	O:14 NRV LOW	6:14	0:28	
JII LOG1 MB1	ódate 1	/6 unc								-

APPENDIX C. GOVERNMENT EVALUATION TEST DATA: INTERFERENCES

Blank

Test Location:	M-FIELD			Interference	Material: <u>u</u>	NLE ADED	GAS EXH
Date:	8-31-98			Operator.	GWW	1 GL	
Temperature:	90°F			Weather.	55 A	14· 6	m P H
	Det S/N 980206 - 4	5,	SM Ver 02 B - 1	9	Det S/N 80206 -		:/// Ver 2
Pre-test	Alarm	Response	Clear Time		Alarm	Response	Clear Time
H	Yes Mo	BLS NE	D	Yes 🖫	№ □	Bis Low	>
G .	Yes 🖭 No 🗆	NRU HI		Yes [№ No □	NRV MET	<u> </u>
Trial No.	Distance /0 '	Chall. Time	2:00	Distance	10	Chall, Time	2:00
/	Alarm Res	ponse	Clear Time	Alarm	Re	sponse	Clear Time
Time	Yes 🗆			Yes 🗆			
1356	No D			No 🗹	1		
Comments	T04202.DA	7			0520	2.DAT	
Trial No.	Distance / 0	/ Chall. Time	2:00	Distance	10	' Chall. Time	2:00
2	Alarm Res	ponse	Clear Time	Alarm	Re	sponse	Clear Time
Time	Yes 🗆			Yes [1		
1403	No 💆			No 5	7		·
Comments							
Trial No.	Distance / D	Chall, Time	e	Distanc	e /0	Chall. Time	
3	- Alarm Re	sponse	Clear Time	Alarm	·R	esponse	Clear Time
Time	Yes 🗆		***************************************	Yes [3		
1407	No D			No [
Comments						•	
						T T	01
Post-test	Alarm	Response	Clear Time	,	Nam	Response	Clear Time
Post-test H	Alarm Yes No	Response	1	Yes 🗆		Response	

Test Location:	M-FI	نة د ن	- .	Interference	Material:	DIESE	EXHAU:
Date:	8-31-9	۴		Operator:	6W	161	<u> </u>
Temperature:	90 F		•			PH 50	
	Det S/N	-4 9	SM Ver 5,028-1 40206-5	92	Det S/N	-4	S/W Ver 5,028-1
Pre-test	Alarm	Respons	Clear Time		Marm	Respon	
Н	Yes 🖭 No			Yes ☑ Yes ☑		BLS LO	1 1
G	Yes 🗹 No	D NRV L	ا <i>لاه</i>	Tes Ly	- No 🗆	NRU H	
Trial No.	Distance	10 Chall. Tim	e 2'00'	Distance	16	Chall. Tin	ne 2:00
1	Alarm	Response	Clear Time	Alarm	Re	esponse	Clear Time
Time	Yes 🗆			Yes 🗆			
2:41	No 🖸			No 🖸	<u> </u>		
Comments	T04204	, DAT			T05	204.	DAT
Trial No.	Distance //) / Chall. Time	2:00	Distance	10	l Chall. Tin	ne 2:00
2_	Alarm F	Response	Clear Time	Alarm	R	esponse	Clear Time
Time	Yes 🗆			Yes 🗆			
2:55	No E			No ☑	1		
Comments							
Trial No.	Distance / 0	/ Chall. Time	2;00	Distance	10	Chall. Tir	ne 2:00
3	Alarm F	Response	Clear Time	Alarm	R	esponse	Clear Time
Time .	Yes 🗆			Yes 🗆			
3:01	No 🖸			No 🗹			
Comments	T04203	5,316		•	T05	205.	316
	· · · · · · · · · · · · · · · · · · ·						
ost-test	Alam	Response	Clear Time	Alaı	m	Response	Clear Time
н	Yes No			Yes 🛘	No 🗆		
	Voc CI No CI			Yes 🗆	22		T T

SEE PRETEST - GASVAPOR

Test Location:	ERDEC M	-FIELD		Interfer	ence Mat	erial:	AS V	APO	R
Date:	8-31-98			Operat	or:	GW/	GL.		
Temperature:	+93 F	-					Po 5		
	Det S/N 980206 - 4		2B -/			et S/N 206 - 5	5.	sm ve 028	
Pre-test	Alarm Yes 🔯 No 🗆	Response	Clear Time		Alai		Response		Clear Time
н G		BLS LOW NRV HI			es 🗹		NRV ME		
Trial No.	Distance 5 / Alarm Resp	Chall. Time	2 '00" Clear Time		_	5 '	Chall. Time	C	OC "
3:25	No 🗹			J L'''		-A < 0 /	06.DA1		
Comments	7042	06.DAT			/	USA			
Trial No.	Distance 5	Chall. Time	2'00"	D	istance	5'	Chall. Tim	e 2'	vv "
2	Alarm Resp	ponse	Clear Time	Ţ,	Alarm	Re	esponse		Clear Time
Time	Yes 🗆			1 1	es 🛘				
3;31	No 🖫			ـا لـ				<u> </u>	
Comments									
Trial No.	Distance 5	Chall. Time	2'0"		Distance	5'	Chall. Tir	ne 2	'ov "
3	Alarm Res	ponse	Clear Time		Alarm	F	tesponse		Clear Time
Time	Yes 🗆			1 1	res 🗆				
3:39	No 🗹			ַן נ	No []	<u> </u>			
Comments	T04207	1. 51k			7	052	07,51		
Post-test	Alarm	Response	Clear Time		Ala	rm	Respons	e	Clear Time
Н	Yes 🗆 No 🗆			<u> </u>	∕es 🛚	No 🗆			
G	Yes 🔲 No 🔲		·		res 🗆	No 🗆			
		SEE	- PRE.	- 72	3T	Bu	RUNG	(CA	٠.১

Test Location:	M-FIELD		Interference Material: Burning CAS
Date:	8-31-98	_	Operator: $4\omega/4L$
Temperature:	+ 93	<u>.</u>	Weather:
	Det S/N 9 80206 - 4	SM Ver 5.02 B - 1	Det S/N S/W Ver 980206-5 5.028-1
D	Alarm Resp	Clear Time	Alarm Response Time
Pre-test H	Yes No D BL5		Yes D No D Bisiow
G	Yes P No D NRV		Yes No D NRV HI
Trial No.	Distance / 5 Chall.		
i	Alarm Response	Clear Time	Alarm Response Time
Time	Yes 🗆		Yes 🗆
3:58	No II		No DZ
Comments	T04208	.DAT	T05208.DAT
Trial No.	Distance 15 Chall.	Time 3:00	Distance 15 Chall. Time 3:50
2		Clear Time	Clear Alarm Response Time
Time	Alarm Response	Title	Yes 🗆 🗸
4:10	Yes 🗆		No IS
7,10			
Comments			
			Distance 15' Chall. Time
Trial No.	Distance 15 Chall.		Distance 15' Chall. Time Clear
3	Alarm Response	Clear Time	Alarm Response Time
Time	Yes 🗆		Yes 🗆
4:21	No 🔽		No 🗹
Comments	T04209. 3	16	T05209.516
		Clear	Clear
Post-test	Alarm Respor	1 1	Alarm Response Time
н	Yes No 🗆		Yes No D
G	Yes No 🗆		Yes No D
	Si	= PRF-TE	EST DIESEL VAPOR

á

	M E	5. 5			Interferenc	e Matei	rial:	1835C	VAPOR
	M-F-								
Date:					Operator:		11.0	1 EL	. 0:1
Temperature:	+ 93	3 F_			Weather.		18 10	5 N	1917
	Det	S/N		S/W Ver	Γ	De	t S/N	\$	M Ver
		06-4	, 5	.02B-1		980	206-5	5	62B-1
	1000	7							
			Response	Clear Time		Alarr	n	Response	Clear Time
Pre-test	Yes 🕠	No 🗆			Yes	D	No 🗆	BLS LOW)
Н		No 🗆	BLS LO	I	Yes	В		NRVLOL	
G		-	/· Ku Zu						
Trial No.	Distance	5'	Chall. Time	2100	Dista	nce	5'	Chall. Time	2:00
mai No.				Clear Time	Alar	m	Res	oonse	Clear Time
Time	Alarm		ponse	Time	Yes				
	Yes □ No ဩ				No	D)			·
16:50	TO	42	10 .DAT			7	052	10.DAT	
Comments									
	Distance	5'	Chall. Time	2:00	Dista	nce	51	Chall. Time	Z:00
Trial No.			·	Clear	Ala	m	Res	sponse	Clear Time
	Alarm	Res	sponse	Time	Yes				
Time	Yes □ No 1⊠				No	1			
16:56									
Comments									
		<u> </u>	Chall, Tim		Dist	ance	5'	Chall. Time	e
Trial No.	Distance	5'	Clidii. 1 iii	Clear	爿 늗				Clear
3	Alarm	Re	esponse	Time		arm	Re	esponse	Time
Time	Yes 🗆				Ye:				
17:02	No 🔀			<u></u>		`	<u></u>	51 is	
Comments	To	421	1514			70	5 211-	310	•
		<u></u>		<u> </u>					
				Clear		Alaı	m	Response	Clear Time
Post-test	Alarm		Response	Time	Yes	· 🗆	No 🗆	 	
Н		No 🗆	· · · · · ·	_	╛┝──	<u> </u>	No □		
G	Yes 🗆 🐧	No 🗆							

Test Location:		Field			In	terference Ma	terial:	Diesel	Ru	Vn17
Date:	8-31-	98			0	perator:	G-L			
		7°F			v	Veather:	489114	51	mPIL	
Temperature:		<u> </u>								
		Det S/N		S/W Ver	\neg	T.	et S/N		S/W V	l
	980	0206-07	, !	5.028-		98	0206-0	<u> </u>	021	-/
										Class
	Ala		Response	Clea Tim		Ala	m	Response	e	Clear Time
Pre-test	Yes 🔼	No 🗆	BULL		-	Yes 🗷	No 🗆	BUSC	ou	
H G	Yes Ž	No 🗆	NRV L			Yes D	No 🗆	MRVL	on	
G			1 (100 -							
	Distance	15f7	Chall. Time	2.300		Distance	15ft	Chall. Time	e Z;	UD
Trial No.		1711		Clear						Clear Time
	Alarm	Res	ponse	Time		Alam	Res	ponse		Time
Time	Yes 🗆				1	Yes □ No 🕱				
17/13	No 💢					<u></u>	To 571	2. DAT		
Comments		10421	2. DA7				03 01	C. UH 7		
							105-	Chall. Tim		
Trial No.	Distance	15tr	Chall. Time	e 		Distance	15ft	Chail. Till	"	Clear
2	Alarm	Re:	sponse	Clear Time		Alarm	Re	sponse		Time
Time	Yes 🔲					Yes 🗆				
17:21	No ⊠					No ⊠				
Comments						L	<u> </u>		!	
Comments									<u> </u>	
									-	
				e		Distance		Chall. Tir	ne	
Trial No.	Distance		Chall. Tim			Distance			me	Clear
Trial No.				e Clear Time		Alarm	· Re	Chall. Tir esponse	me	Clear Time
	Distance Alarm Yes		Chall. Tim	Clear		Alarm Yes	Re		me	
3	Distance		Chall. Tim	Clear		Alarm Yes No No		esponse	me	
7	Distance Alarm Yes No No		Chall. Tim	Clear		Alarm Yes No No	Re S 213.	esponse	me	
7 Time	Distance Alarm Yes No No	Re	Chall. Tim	Clear		Alarm Yes No No		esponse	me	
7 Time	Distance Alarm Yes No No	Re	Chall. Tim sponse	Clear Time		Alarm Yes No 7 c	s 213.	esponse SI Ir		
7 Time	Distance Alarm Yes No Alarm Alarm	Re	Chall. Tim	Clear Time		Alarm Yes D No D Ala	s 213	esponse		Time
Time 17:26 Comments	Distance Alarm Yes No 7	Re 4 24 3	Chall. Tim sponse	Clear Time		Alarm Yes No 7 c	s 213.	esponse SI Ir		Time

Test Location:	M-	Field		·		Inter	ference Mat	terial: <u>K</u>	ero seu-	e Vapon
Date:	8-31-	- 98				Ope	rator:	G.L.		
Temperature:	+9	70P				Wea	ather:	475, RI	1 SM	on_
		et S/N	,4		/ Ver			0 20 (- 0		SM Ver
Pre-test	Alar	m	Respons	e	Clear Time		Ala	rm	Response	Clear Time
Н	Yes 🕱	No 🗆	RLS L	on			Yes 🗹	No □	BLSL	
G	Yes 🖪	No 🗆	NRUL	ዕ ኤ			Yes 🔯	No 🗆	MRU H	í
	Distance	5ft	Chall. Tim	ne	2:W	7 [Distance	Sfr	Chall, Time	2:00
Trial No.	Alarm		ponse		Clear Time	֓֟֟֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֡֓֓֓֓֓֓֡֓֓֡֓֡	Alarm		ponse	Clear Time
Time	Yes 🗆					7 [Yes 🔲			
17:39	No X						No ⊠			
Comments	704	2140	A7				70	5214	DAT	
										
	Distance	5 fr	Chall. Tim	ne ·	2::0		Distance	Sfr	Chall. Time	7:00
Trial No.	Distance	5 (T	Chall. Tim	ne ·	2:#0 Clear Time		Distance Alarm		Chall. Time	Clear Time
				ne ·	Clear		Alarm Yes 🔲			Clear
2	Alarm			ne ·	Clear		Alarm			Clear
7 Time	Alarm Yes No Z	Res		ne ·	Clear		Alarm Yes 🔲			Clear
7Time	Alarm Yes	Res		ne ·	Clear		Alarm Yes 🔲			Clear
Time (7)44 Comments	Alarm Yes No No	Res	sponse		Clear Time		Alarm Yes 🔲			Clear Time
Time (7744) Comments Trial No.	Alarm Yes No Z	Res	sponse		Clear		Alarm Yes No A	Re 5 fr	sponse Chall. Tim	Clear Time
Time (7)44 Comments	Alarm Yes No No	Res	sponse		Clear Time		Alarm Yes No Distance Alarm	Re 5 fr	sponse	Clear Time
Time (7744) Comments Trial No.	Alarm Yes No Distance Alarm Yes	Res	sponse - Chall. Tir		Clear Time		Alarm Yes No Distance Alarm Yes	Re 5 fr	sponse Chall. Tim	Clear Time
Time (7)44 Comments Trial No.	Alarm Yes No S Distance Alarm Yes No No S	Res	ponse - Chall. Tir	me	Clear Time		Alarm Yes Distance Alarm Yes No	s tr	chall. Timesponse	Clear Time
Time (7) 44 Comments Trial No. Time	Alarm Yes No S Distance Alarm Yes No No S	Res	sponse - Chall. Tir	me	Clear Time		Alarm Yes Distance Alarm Yes No	Re 5 fr	chall. Timesponse	Clear Time
7 Time (7) 44 Comments Trial No. 3 Time 17:45	Alarm Yes No S Distance Alarm Yes No No S	Res	ponse - Chall. Tir	me	Clear Time		Alarm Yes Distance Alarm Yes No	s tr	chall. Timesponse	Clear Time
7 Time (7) 44 Comments Trial No. 3 Time 17:45	Alarm Yes No S Distance Alarm Yes No No S	Res	ponse - Chall. Tir	me	Clear Time		Alarm Yes No No No No No No No N	5 tr	Chall. Timesponse	Clear Time Clear Time Clear Time
7 Time (7) 44 Comments Trial No. 3 Time 17:45	Alarm Yes No S Distance Alarm Yes No No S	S fo	ponse - Chall. Tir	me	Clear Time		Alarm Yes Distance Alarm Yes No Ala	5 fr R 215.	Chall. Timesponse	Clear Time Clear Time Clear Time
Time (7744) Comments Trial No. 3 Time 17:15	Alarm Yes No S Distance Alarm Yes No S	5 ft Re	- Chall. Tir sponse	me	Clear Time		Alarm Yes No No No No No No No N	5 tr	Chall. Timesponse	Clear Time Clear Time Clear Time

								_	
Test Location:	M-Field			Interferen	ce Mate	erial: K-c	PVOJENE	Luni	ירות
Date:	8-71-98			Operator:		-0 to			
Temperature:	900F			Weather:					
				Γ	<u> </u>	et S/N	7 [sw'	√er
	Det S/N 980206- b		SM Ver 02 <i>B</i> -1			206-0	s Sc	1215-	1
	760286-0	7 3	025-1	L	- 1 0 -				
		T _	Clear		Alar	m	Respons		Clear Time
Pre-test	Alarm	Response		Yes	<u>ka</u>	No 🗆	RUS L		
Н	Yes X No 🗆	NRU M		Yes		No □	NRV M		
G	165 🚨 💢	INCOM	EVI			•			
	Distance 15ft	Chall. Time	2:0	Dista	nce	15/0	Chall. Tim	e <u>Z</u> ;	U)
Trial No.	1010		Clear	Alan		Res	ponse		Clear Time
	7.10	sponse	Time	Yes		1100			
Time	Yes 🗆			No	Ø				
18:62	70471	7. 047			To	= 216	DAT		
Comments		0							
	Distance 15 fr	Chall. Time	2:03	Dista	nce	154	_ Chall. Tin	ne Z.	10
Trial No.			Clear	Alai	m	Res	sponse		Clear Time
	7.10.11.1	esponse	Time	Yes					
Time	Yes □ No j ⊠	ļ		No	図				
18:07									
Comments									
	Distance 1517	Chall. Time	e 2'0V	Dist	ance	1517	Chall. Ti	me į	2700
Trial No.	Distance 5 (7)		Clear				esponse		Clear Time
	7.10.111	esponse	Time	Ala Yes		Ne	эропэс	+-	
Time	Yes D			No	Þ				
18:14					70	5 217	SIL		
	107 11.	SIF	-> D/C	Pohen	U\	in his	17	•	
Comments	out o	AIC		•					
Comments	put	· · · · · · · · · · · · · · · · · · ·							Clear
Comments	Alarm	Response	Clear Time		Alar		Respons		Clear Time
	put_	Response TLS Low	Clear Time	Yes)EI	No 🗆	BLS M	€1)	
Post-test	Alarm	Response JLS Low IN RV M	Clear Time	Yes	À B		BLS M	€1)	

Test Location:	MFiell			Interferen	ce Mater	ial: J	PE V4	por
Deter	9/1/98			Operator:		607	ره	
Date:	7215			Weather.	(853 RH	7,	npit
Temperature:	14 [-			_				
	Det S/N	s	/W Ver			S/N		S/W Ver
	980206-0	4 ns	20-1		980	206-05	m	5020-1
						Т		
	Alema	Response	Clear Time		Alam	n	Response	Clear Time
Pre-test	Alarm Yes ☑ No □	BLS MED		Yes	: DXK	No 🗆	IS LS M	E/ 1
Н	Yes ☑ No □	NRV ME		Yes	A	No 🗆	NRU L	on
G	165 2	TINKU ME	<u> </u>	J				
	Distance 5 fc	Chall. Time	2:00	Dista	nce	Str	Chall. Time	e 2:60
Trial No.			Clear			Resi	oonse	Clear Time
	7.10	esponse	Time	Alai Yes	I	NRV		
Time	1 1	Lon		No		. 41-4		
8:20	No 🗆				70	5219	DAT	
Comments	704219	, DA7						
				7 Diet	ance		Chall. Tim	ne
Trial No.	Distance	Chall. Time			T			Clear
2	Alarm R	esponse	Clear Time	Ala	arm	Res	sponse	Time
Time	Yes 🛭 NRV	Low		1 1				
8.15	No 🗆	· ·		No	図			
Comments								
		Chall. Time		Dis	tance		Chall. Ti	me
Trial No.	Distance		Clear	1 F		D		Clear
Trial No.	Distance		Clear Time		larm	Re	Chall. Ti	
	Distance Alarm F	Chall. Time		A	larm s 🔲	Re		Clear
3	Distance Alarm F Yes No Chall. Time Response	Time	A Ye No	larm s 🔲		esponse	Clear	
Time	Distance Alarm F Yes No Chall. Time	Time	A Ye No	larm s 🔲			Clear	
Time 8:15	Distance Alarm F Yes No Chall. Time Response	Time	A Ye No	larm s 🔲		esponse	Clear Time	
Time 8:15	Distance Alarm F Yes No Chall. Time Response	Time	A Ye No	larm	70s 7	20, SIL-	Clear	
Time 8:15	Distance Alarm Yes No Toy 223 Alarm	Chall. Time Response	Time	A Ye No	larm s 🗀) 🔣	705 7	esponse	Clear
Time %:15 Comments	Distance Alarm F Yes No Toy 223	Chall. Time Response	Time	A Ye No	larm	70s 7	20, SIL-	Clear

Test Location:	M-Fie	14		Interference	e Material:	7	Ty Kurn	1145
Date:	9/1/98			Operator:		0 20.	<u>s</u>	
Temperature:	74°F			Weather:	65	nH.	· · · · · · · · · · · · · · · · · · ·	
	Det S/N 9 % 206-	1 1	SW Ver 502) —(Det S/ 97206		ins	S/W Ver
Pre-test	Alarm	Response	Clear Time		Alarm		Response	Clear Time
Pre-test H	Yes ☑ No	O BU LO	~	Yes	Ø No		BLS ME	9
G	Yes 🐧 No			Yes	⊠ No		MRV L	w
Trial No.	Distance [5	Chall. Time	= 2)ω	Distan	ice /.	s fe	Chall. Time	
1			Clear Time	Alam	n	Resp	oonse	Clear Time
Time	Alarm Yes	Response	71110	Yes				
8:43	No 😥			No	X			
Comments	70421	LI. DA7		_	To5 2	21. C	DAT	
Commence								
	Distance	Chall. Time	e	Distar	nce		Chall. Tim	e
Trial No.	Alarm	Response	Clear Time	Alan	m	Res	ponse	Clear Time
Time	Yes 🗆			Yes	_ 1			
8:56	No 🔯			No				
Comments						·		
							Chall, Tir	70
- 1-1 No		Chall. Tim	_	Dista			Chail. III	ile
Trial No.	Distance	Chail. Till	ne		ince			Clear
3	Distance	Response	Clear Time	Ala		Re	sponse	Clear Time
<u> </u>			Clear	Ala	m D	Re	sponse	
3	Alarm		Clear	Ala	₩			Time
Time	Alarm Yes □ No K1		Clear	Ala	₩		zz. SIL	Time
7:10	Alarm Yes □ No K1	Response	Clear	Ala	₩			Time
Time no	Alarm Yes No No Toy 21	Response	Clear Time	Ala	₩			Time
7:10	Alarm Yes □ No K1	Response Response	Clear Time	Ala	m D D D D D D D D D D D D D D D D D D D		22.316	Time

Test Location:	MEG	[]				Inte	rference Mat	erial: <u>Car</u>	19.49 p	While	<u>hi</u>
Date:	9/1/58					Оре	erator:	L09	507		
Date.	-4:					We	ather:				
Temperature:											
	П	et S/N		S/W	Ver		D	et S/N		SW V	'er
		0206-04	ma	502	<i>D</i> -1		98	0206-05	- M	502	D-1
	100	0200-01	حلثا لـ	<u> </u>							
					Clear] [A 1-		Response		Clear Time
Pre-test	Ala	m	Response		Time	┨	Ala	No 🗆	<u> </u>		
Н	Yes 🗵	No 🗆	1325	HT		┨╏	Yes ⊠		BLS LO		
G	Yes 💆	No 🗆	MRUN] [Yes 💆	140 🖸	MKVU	<u> </u>	
				υw 		- 1					
Trial No.	Distance		Chall. Time	e]]	Distance		Chall. Time		
i					Clear Time		Alarm	Res	ponse		Clear Time
	Alarm	Res	ponse		Title	-	Yes 🗆				
Time	Yes D						No ⊠				· · · · · · · · · · · · · · · · · · ·
9:26	L					}	705	223	717		
Comments	Toy	223. 0	A7								
							Γ		Chall Tim		<u> </u>
Trial No.	Distance		Chall. Tim	ne]	Distance		Chall. Tim	 ie	Cloor
Trial No.	Distance	Res	Chall. Tim	ne	Clear Time]	Distance	Re	Chall. Tim	e	Clear Time
		Res		ne			Alarm Yes	Re		e	
2	Alarm	Res		ne			Alarm	Re		e	
Time	Alarm Yes	1		ne			Alarm Yes	Re		ee .	
7 Time	Alarm Yes No	1	sponse				Alarm Yes No No	Re	sponse		
7 Time	Alarm Yes No	1			Time		Alarm Yes	Re			Time
Time 'j)'4] Comments	Alarm Yes No R 7:44 Gu	رتن (در)	sponse				Alarm Yes No No Distance		sponse		
Time 1941 Comments Trial No.	Alarm Yes No Distance	رتن (در)	sponse Chall. Tir		Time		Alarm Yes No Distance Alarm Yes		sponse Chall. Til		Time
Time 7)41 Comments Trial No.	Alarm Yes D No A Distance Alarm	رتن (در)	sponse Chall. Tir		Time		Alarm Yes Distance Alarm Yes No No Se	R	sponse Chall. Tir esponse		Time
Time 7:4] Comments Trial No. Time 7:5)	Alarm Yes Distance Alarm Yes No	70 (ς) Rε	Sponse Chall. Tir		Time		Alarm Yes Distance Alarm Yes No 7 or 214.	Sponse Chall. Till esponse		Time	
Time 7141 Comments Trial No. 7	Alarm Yes Distance Alarm Yes No	رتن (در)	Sponse Chall. Tir		Time		Alarm Yes Distance Alarm Yes No 7 or 214.	sponse Chall. Tir esponse		Time	
Time 7:4] Comments Trial No. Time 7:5)	Alarm Yes Distance Alarm Yes No	70 (ς) Rε	Sponse Chall. Tir		Clear		Alarm Yes Distance Alarm Yes No 7 or 214.	Sponse Chall. Till esponse		Clear	
Time 'ji4j Comments Trial No. Time 9:5) Comments	Alarm Yes Distance Alarm Yes No	Re	Sponse Chall. Tir	me	Time		Alarm Yes Distance Alarm Yes No Alarm	7 or 214.	Sponse Chall. Till esponse	me	Clear
Time 7:4] Comments Trial No. Time 7:5)	Alarm Yes No Distance Alarm Yes No Re	Chall. Tir	me	Clear		Alarm Yes Distance Alarm Yes No Alarm	7 or 214.	Sponse Chall. Till esponse	me	Clear	

Test Location:	M-Firla			Interferen	ce Mat	erial:	loud, b	V17175	
Date:	5/1/18			Operator:	·	Low			 .
Temperature:	7 84-			Weather:		595, pH	·		
				ı F		et S/N	¬	S/W Ver	
	Det S/N		S/W Ver			206-¢5	.	5020-1	
	990206-0	4 M	5020-1] [76-			3020 1	
			Clear	7			5	1	lear
Pre-test	Alarm	Respons	e Time		Ala		Respons		ime
н	Yes X No C	1000 1 11	F/1		5 	No 🗆	BU ME		
G	Yes 🔀 No 🛭	1 NEV L	uu	Tes	, 1 3 7	140 🚨	NRV L	ED	
				7 5:45		7-6	Chall. Tin	ne	
Trial No.	Distance 35-ft	Chall. Tim	e 	Dista	nce .	15tr	Ondii. 1 iii	Cle	
	Alarm F	lesponse	Clear Time	Alar	m	Res	ponse	Tin	
Time	Yes 🗆			Yes					
10:15	No ⊠			No	X			<u> </u>	
Comments	T04 215	· 047			7	5215.	DAT		
Table 1	Distance	Chall. Tim	ne	Dista	ance		Chall. Ti	me	
Trial No.			Clear	┪		Re		Cle	ear me
2	Alarm F	Chall. Tim		Aia	m	Re	Chall. Tii	Cle	
ZTime	Alarm F		Clear	Aia		Re		Cle	
2	Alarm F		Clear	Ala	m	Re		Cle	
ZTime	Alarm F		Clear	Ala	m	Re		Cle	
2 Time (0:20	Alarm F	Response	Clear Time	Ala Yes No	m D	Re	sponse	Cle	
2 Time (0:20	Alarm F		Clear Time	Ala Yes No	m	Re		Cle	me
Time /v`.20 Comments	Alarm F Yes D No M	Response	Clear Time	Ala Yes No	m D	· ·	sponse	ime	
Time (U:10) Comments Trial No.	Alarm F Yes No Si Distance	Response Chall. Tin	Clear Time	Ala Yes No Dist Ala Yes	ance	· ·	sponse Chall. T	ime	ne
Time (0:20 Comments Trial No.	Alarm Final Property of the Control	Response Chall. Tin	Clear Time	Ala Yes No Dist Ala Yes	ance	· ·	sponse Chall. T	ime	ne
Time 10:20 Comments Trial No. 7 Time 10:27	Alarm Yes No No Alarm Distance Alarm Yes	Response Chall. Tin Response	Clear Time	Ala Yes No Dist Ala Yes	ance	· ·	sponse Chall. T	ime	ne
Time /o`.20 Comments Trial No. 7	Alarm Yes No No Alarm Alarm Yes No	Response Chall. Tin Response	Clear Time	Ala Yes No Dist Ala Yes	ance	Ro	sponse Chall. T	ime	ne
Time 10:20 Comments Trial No. 7 Time 10:27	Alarm Yes No No Alarm Alarm Yes No	Response Chall. Tin Response	Clear Time	Ala Yes No Dist Ala Yes	ance	C 7 216	Chall. T	ime C T	lear ime
Time 10:20 Comments Trial No. 7 Time 10:27	Alarm Yes No No Alarm Alarm Yes No	Response Chall. Tin Response	Clear Time Clear Time Clear Time	Ala Yes No Dist Ala Yes	ance	C 5 216	Chall. T	ime C T	lear
Time (V:10) Comments Trial No. Time (V:14) Comments	Alarm Yes No	Chall. Tin	Clear Time Clear Time Clear Time	Ala Yes No Dist Ala Yes	ance	C 7 216	Chall. T	ime C T	lear ime

Test Location:	M-F	Field				Inte	rference Mate	,	used fi	re
Date:	9/1/58					Оре	erator:	Lozus		
Temperature:	7					We	ather:			
·		et S/N) 20(- 0 Y	M	SW V	İ			et S/N 206-05	1 1	SW Ver
Pre-test	Alar	rm	Response	•	Clear Time		Alar	m	Response	Clear Time
Н	Yes 🛣	No 🗆	BLS MI	≧ f)			Yes 🔽	No □	BU MEI)
G	Yes ⊠	No 🗆	NRV 1	+1			Yes ⊠	No 🗆	MRU ME	11
Trial No.	Distance	22-fr	Chall. Time	2.	ý s] [Distance	22 fr	Chall. Time	2200
	Alarm	Res	ponse		Clear Time		Alarm	Res	ponse	Clear Time
Time	Yes 🗆		,			1	Yes 🗆			
10:16	No 12					ا , [No 💆			
	704	227.0	47				70:	5 227.	DAT	
Comments		Jr Aur	· (- 10)	r Rx	וריטו		105F R	x 1591	frezge	-11
	Distance		Chall. Tim		: w	٦ ٔ	Distance		Chall. Time	
Trial No.	Alarm	22fr	sponse		Clear Time		Alarm	Res	sponse	Clear Time
Time	Yes 🛘					1	Yes 🗆			
10:47	No EX						No ⊠			
Comments	10:45	Aunal	10:50 Red	-						
Trial No.	Distance	22 fr	Chall. Tin	ne			Distance	22 tr	. Chall. Tin	ne
3	Alarm	Re	sponse		Clear Time		Alarm	Re	esponse	Clear Time
Time	Yes 🗆						Yes 🗆			
10:56	No 🔁						No 🗵	<u></u>		<u> </u>
Comments	Toy	228.	SIL					Tog 21	r, SIV	·
Post-test	Alam	m	Response		Clear Time		Ala	m	Response	Clear Time
						l [Yes 🗆	No 🗆	Ī	} }
Н	Yes 🗆	No 🗆				L				

Test Location:	M-Fiel	2		Inte	rference Ma	terial:	Itel Bur	n14 -
Date:	1/1/58			Оре	erator:	L0 205		
Temperature:	83°F			We	ather:	579.RK	}	
	Det S/N 980206-0	4 9	SW Ver 502 D —{		1	Det S/N DLU 6-05	15	SM Ver
//:/o Pre-test H G	Alarm Yes 🔯 No 🗆 Yes 🗆 No 🗅	10-31	e <u>i</u>		Ala Yes 🔼	No 🗀	Response RES MA	ED
	Distance 22 fr	Chall, Time	e 2:00] [Distance	22 1	Chall. Time	2:03
Trial No.		esponse	Clear Time	֓֟֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓	Alarm		ponse	Clear Time
Time	Yes 🗆				Yes □ No IX			
Comments	704 229 D	A7.			70	5 229	DAT	
	Distance	Chall. Time	e	 7 [Distance		Chall. Tim	e
Trial No.	Distance \ \ Alarm R	Chall. Time	e Clear Time		Distance Alarm	Res	Chall. Tim	e Clear Time
			Clear			Res		Clear
7 Time [2:45]	Alarm R	esponse	Clear Time		Alarm Yes	Res		Clear
Time [2:45] Comments	Alarm Ro	esponse	Clear Time		Alarm Yes	Res		Clear Time
7 Time [2:45]	Alarm Royes Distance	esponse	Clear Time		Alarm Yes □ No IX		sponse	Clear Time
Time [2:45] Comments Trial No. 1 Time	Alarm Review Programmer Programme	esponse Chall. Tim	Clear Time		Alarm Yes No Distance		ponse Chall. Tin	Clear Time
Time [2:45] Comments Trial No.	Alarm Revenue Alarm Revenue Alarm Revenue Reve	esponse Chall. Tim	Clear Time		Alarm Yes Distance Alarm Yes No X		Chall. Tin	Clear Time
7 Time [12:45] Comments Trial No. 1 Time [12:50]	Alarm Review Programmer Programme	esponse Chall. Tim	Clear Time		Alarm Yes Distance Alarm Yes No X	Re	Chall. Tin	Clear Time
7 Time [12:45] Comments Trial No. 1 Time [12:50]	Alarm Review Property	esponse Chall. Tim	Clear Time		Alarm Yes Distance Alarm Yes No X	Re 2 30. 3	Chall. Tin	Clear Time Clear Time Clear Time
Time [12:45] Comments Trial No. [1] Time [12:50] Comments	Alarm River Distance Alarm River Distance Alarm River Distance Alarm River Distance Alarm River Distance Alarm Cum	Chall. Timesponse	Clear Time		Alarm Yes No No No No No No No N	Re 2 30. 3	Chall. Tin	Clear Time Clear Time Clear Time

Test Location:	M-Fiell			Interfere	ence Ma	nterial: <u>U</u>	Mits Ph	espho	iw
Date:	9/1198			Operato	or:	Luza	y)		
Temperature:	8104	2		Weathe	er:	559, RH			· · · · · · · · · · · · · · · · · · ·
	Det S/N 980206-0	, Ms	S/W Ver		i	Det S/N		SM M50	Ver 2.D-1
Pre-test	Alarm	Response	Clear Time			arm	Respons	se	Clear Time
н	Yes to No □		1cL	┥ ├──	es DX	No 🗆		سان	
G	Yes ⊠ No □	NRV 4	169] <u> </u>	es 🔯	No 🗆	NRV H	(E()	
Trial No.	Distance 50 ft	Chall, Time	2;0U	Dis	tance	su t	Chall. Tin	ne '	2:00
1	Al-	esponse	Clear Time		arm	Res	sponse		Clear Time
Time	Alarm Re	sponse			s 🛮				
13:07	No 🗖			No	₽₹				
Comments	Toy 201.	DAT				7052	-31. DA-	<i>T</i>	
						<u> </u>		<u>.</u>	
	Distance	Chall, Time		Dis	tance		Chall. Ti	me	
I Triel No.	Distance	Onem rom	•						
Trial No.		esponse	Clear Time		larm	Re	sponse		Clear Time
			Clear	Ye	s 🛚	Re	sponse		
2	Alarm Ro		Clear	┥ ├─	s 🛘	Re	sponse		
ZTime	Alarm Re	esponse	Clear	Ye	s 🛚	Re	sponse		
7 Time 13:10	Alarm Ro	esponse	Clear Time	Ye	s 🛚	Re	sponse Chall. T	ime	
7 Time 13:10	Alarm Ro	esponse Chall. Tim	Clear Time	Ye	s 🗆			ime	
Time 13:10 Comments Trial No.	Alarm Ro	esponse	Clear Time	Ye	s D		Chall. T	ime	Time
Time 13:/J Comments Trial No. 3	Alarm Ro	esponse Chall. Tim	Clear Time	Ye No	s 🔲	R	Chall. T	ime	Time
Time 11:10 Comments Trial No.	Alarm Ro	Chall. Tim	Clear Time	Ye No	stance	R	Chall. T esponse	ime	Time
Time 13:/V Comments Trial No. 3 Time (3):(Y	Alarm Re Yes No Alarm Re Distance Alarm Re Yes No No No No No No No No No No	Chall. Tim	Clear Time	Ye No	stance	R	Chall. T esponse	ime	Time
Time 13:/V Comments Trial No. 3 Time (3)(Y	Alarm Re Yes No Alarm Re Distance Alarm Re Yes No No No No No No No No No No	Chall. Tim	Clear Time	Ye No	stance	Ro 21	Chall. T esponse		Time
Time 13:/\mathcal{I} Comments Trial No. Time (\(\frac{1}{2}\)) Comments	Alarm Royes Distance Alarm Royes No 12 No	Chall. Timesponse	Clear Time Clear Time	Ye No	s D stance	Ro 21	Chall. T esponse		Clear Time

	····					\ \	Yellon s	in the
Test Location:	M-Field						10000	
Date:	9/1195			Ope	rator:	L0301		
Temperature:	83,6			Wea	ither:	<u> </u>		
	Det S/N		S/W Ver			et S/N		S/W Ver
	980206-01	e ins	5020-1		980	206-05	- 1 195	1-02D-1
			•	ı	L			
Pre-test	Alarm	Response	Clear Time		Ala	m	Response	Clear Time
Н	Yes ☑ No □	BLS ME	n		Yes <u>M</u>	No 🗆	BLY ME	2
G	Yes ⊠ No □	MRV H			Yes 💆	No 🗆	MRV ME	9
				_ =				·
Trial No.	Distance 50 fr	Chall. Time	;] [Distance	50 ft	Chall. Time	
	Alarm Ro	esponse	Clear Time	$\left \cdot \right $	Alarm	Res	ponse	Clear Time
Time	Yes 🔯 🔾	Low		1 [Yes 🛛	_	Low/Med	
12,52	No 🗆] [No 🗆	L	-112	
Comments	To 4 2	33. DAT					DAT	
	w/ Rgin/ Disr	filen			<u> </u>	sin/ Dur	tilten	
Trial No.	Distance	Chall. Time	:		Distance		Chall. Time	
Trial No.	Alarm R	esponse	Clear Time	֓֟֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֡֓֓֓֓֓֡֓֓֡	Alarm	Re	sponse	Clear Time
Time	Yes 🗷 ßLS	Low		1 [Yes 🗖	DU.	Lon	
17:57	No 🗆				No 🔲			
14/60 Comments								
Comments								
	Distance	Chall. Time		7 [Distance		Chall. Tim	ne
Trial No.			Clear	ij				Clear
	Alarm R	esponse	Time	┧┟	Alarm		esponse	Time
Time	Yes DL IJL	7			Yes 💢	IIIS		
14:15	No 🗆					, ve 2:		<u> </u>
Comments	Toy 234	Silv			/	05234	, >1/	•
		D	Clear Time		Alaı	m	Response	Clear Time
Post-test	Alarm	Response	Time	-	Yes 🗆	No 🗆		
н	Yes No			 -	Yes 🗆	No 🗆		
G	Yes 🔲 No 🔲							

Test Location:	9/1-	Field				Inte	rference Mat	erial:	Violed	Sm	he_
Date:	9/11-	7 F				Оре	erator:	L070	1		
						We	ather.		•		
Temperature:											
		Det S/N		sw	Ver		D	et S/N		s/W	1
	98	`0 20G-0'	1 M	502	0-1		98	U 200-0 S	5 M	SUZZ)
	L										
					Clear		Ala	m	Response		Clear Time
Pre-test	Ala		Response		Time		Yes ⊠	No 🗆	ALS ME	-, 	
н	Yes 🛛	No 🗆		W			Yes 🔀	No 🗆	HEW MI	$\neg \neg$	
G	Yes 🔼	No 🗆	NRV E	4]	7	-	CAPO TA	- /1	
						ן ו	Distance		Chall, Tim		7
Trial No.	Distance	soft	Chall. Time	B] 	Distance	50 fE			Clear
i	Alarm	Res	ponse		Clear Time		Alarm	Res	ponse		Time
Time	Yes 🗆						Yes 🗖	14 L	NOW/		
14:36	No ⊠						No 🗆				
Comments	704	1235.	DAT						75. DAT		
Comments	c ha	712	Ram/DL	17 -	Elers		fun b	rc l			
			Chall. Time			7	Distance	· · · · · · · · · · · · · · · · · · ·	Chall. Tim	ne	
Trial No.	Distance		Chail. Till		Clear	1					Clear
2	Alarm	Re	sponse		Time		Alarm		sponse	ļ	Time
Time	Yes 🗆						Yes 🔀	H	in		
14:43	No 🛱					ال	No 🗆			<u> </u>	
Comments											
Comment						<u></u>					
	[a:a		Chall. Tim				Distance		Chall. Ti	me	
Trial No.	Distance		Crian. Tin		Clear	=		1			Clear
3	Alarm	Re	esponse		Time		Alarm	R	esponse	<u> </u>	Time
Time	Yes 🛘						Yes 🔯	1362			
14150	No K			<u> </u>		ل	No 🗆	<u> </u>			
Comments	704	236.	SIF				70	5 236	516-		
					Clear	[Clear
Post-test	Alan	m	Response		Time		Ala	m	Respons	e	Time
Н	Yes 🗆	No 🗆					Yes 🛘	No 🗆			
	Yes 🗆	No 🗆				[Yes 🔲	No 🗆	Į		! !

Test Location:	M- Field			Interfer	ence Ma	terial:	ed Sm	the
Date:	9/1/98			Operat	or:	Lozu	7	
Temperature:	86°F			Weath	er			
<u> </u>			04445			Det S/N	7 [S/W Ver
	Det S/N 98 U 2 U G - O	4 81	SW Ver		1	706-05	M	5020-1
	11 0200-0	/ /	30-0-1		76	200		
	Alarm	Response	Clear Time		Ala	arm	Response	Clear Time
Pre-test H	Yes 🗹 No 🗆	BLS Me		Y	es 💆	No 🗆	ITLS in	e j
G	Yes ⊠ No □	NRV H		Y	es 🕱	No □	NKU M	-1
						· · · · · · · ·		
Trial No.	Distance 50 fr	Chall. Time		Dis	tance	SU fr	Chall. Time	
	Al Po	sponse	Clear Time	A	larm	Res	ponse	Clear Time
Time	Alarm Re	sponse		Ye	s 🗆			
15:07	No 💆			No	R			
Comments	Toy 237.	047				237, C	AT	
	Changed Rain	/Durfil	my tu	<u>1 6</u>	UCh			
	Distance	Chall. Time		Di	stance		Chall. Tim	
Trial No.	Distance	Chall. Time			stance	Res	Chall. Tim	e Clear Time
Trial No.	Distance	<u> </u>	Clear			Res		Clear
Trial No.	Distance Alarm Re	Chall. Time	Clear		larm es 🔲	Res		Clear
Trial No. 2 Time 151/6	Distance Alarm Re Yes No X	Chall. Time	Clear	A Ye	larm es 🖸	Res		Clear
Trial No. 2 Time 151/6	Distance Alarm Re Yes	Chall. Time	Clear	A Ye	larm es 🖸			Clear
Trial No. 2 Time 151/6 Comments	Distance Alarm Re Yes No X	Chall. Time	Clear Time	Ye	larm es 🖸			Clear Time
Trial No. 2 Time 151/6	Distance Alarm Re Yes D No X	Chall. Time	Clear Time	Ye No	slarm es 🖸	6031	sponse	Clear Time
Trial No. Time 151/6 Comments Trial No.	Distance Alarm Re Yes D No M Distance Alarm Re	Chall. Time	Clear Time	Ye No	alarm es	6031	chall. Tir	Clear Time
Trial No. 2 Time 151/6 Comments Trial No. 3	Distance Alarm Re Yes D No X	Chall. Time	Clear Time	Ye No	es 🗆 🗡	6031	chall. Tir	Clear Time
Trial No. Time 151/6 Comments Trial No. Time 15:10	Distance Alarm Re Yes No Re No Re No Re No Re No Re No Re No Re	Chall. Time sponse Chall. Time	Clear Time	Ye No	istance	Re	Chall. Tin	Clear Time
Trial No. 2 Time 151/6 Comments Trial No. 3	Distance Alarm Re Yes D No X Distance Alarm Re Yes D	Chall. Time sponse Chall. Time	Clear Time	Ye No	istance	Re	chall. Tir	Clear Time
Trial No. Time 151/6 Comments Trial No. Time 15:10	Distance Alarm Re Yes D No S Distance Alarm Re Yes D No S To Y 238.	Chall. Time Chall. Time esponse	Clear Time Clear Time	Ye No	istance Alarm	Re Oir (A	Chall. Tin	Clear Time Clear Time Clear Time
Trial No. 2 Time 151/6 Comments Trial No. 3 Time 15:10 Comments	Distance Alarm Re Yes No Re Yes No Re Yes No Re Alarm Re Yes No Re Alarm Re Alarm Re Alarm Re	Chall. Time sponse Chall. Time	Clear Time	A Ye No	istance	Re Oir (A	Chall. Tin	Clear Time Clear Time Clear Time
Trial No. 2 Time 151/6 Comments Trial No. 3 Time 15:10 Comments	Distance Alarm Re Yes D No S Distance Alarm Re Yes D No S To Y 238.	Chall. Time Chall. Time esponse	Clear Time Clear Time	A Ye No	Alarm Alarm	Re OST (G	Chall. Tin	Clear Time Clear Time Clear Time

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Test Location:	M-Fiell 9/1/58		Interference Material: 6-Vees Show Operator: LOZU
Date:	71770		Weather:
Temperature:			
	Det S/N S	W Ver	Det S/N S/W Ver
	970206-04 M50	20-1	980206-07 Vr5020-1
•	D	Clear Time	Alarm Response Time
Pre-test	Alarm Response		Yes 🖪 No 🗆 🏗 Low
H	Yes NO D REV H.		Yes 18 NO D NRV MED
G	Yes NO D NRV H.		
	Distance 50fr Chall. Time		Distance 5u+7 Chall. Time
Trial No.	Distance 5 (17)	Clear	Clear
	Alarm Response	Time	Alarm Response Time
Time	Yes D GB Low		Yes DA G-15 Law
15:50	No 🗆		
Comments	704239. DAT		705 235.0AT
Trial No.	Distance /v fr Chall. Time		Distance / Chall. Time
2	Bassass	Clear Time	Clear Alarm Response Time
Time	Alarm Response Yes (-I Low		Yes Da GB Low
	No D	•	No 🗆
15:57			
Comments			
			Distance 2_C Chall. Time
Trial No.	Distance 2-5 fr Chall. Time		Distance 2-5 — Chall. Time
3	Alarm Response	Clear Time	Alarm Response Time
Time	Yes D (VEV	-	Yes 🔼 VI/R/
16:13	No 🗆		No 🗆
	Toy 240.516		TUT 240.5/L
Comments	[0] - /0		
			Clear
Post-test	Alarm Response	Clear Time	Alarm Response Time
Post-test H	Yes 🗆 No 🗆		Yes 🗆 No 🖸
G G	Yes No D		Yes No D
-		لسيسيا	

	(10 F	. 1i						i	1-11			
Test Location:	<u>M-F</u>	ic/d				Inte	erference Mat	,	17H			
Date:	9/1/98					Operator: L0201						
Temperature:	87°	e				We	eather:				,	
	Det 9 (U2		<i>y</i>		V Ver 2()—/		l	et S/N 206-05	m	sw Suz	1	
			Deemens		Clear Time		Alaı	rm	Response	e	Clear Time	
Pre-test	Alarm	No 🗆	Response		Time		Yes 🕱	No 🗆	BU W			
Н		1 0	ARV L			1	Yes 📶	No 🗆	(VRV M			
G	les 🔼		MICO (-	1	<u> </u>					-/		
Trial No.	Distance 3	+4	Chall. Time	e 2	-!w		Distance	3 fa	Chall. Time	e 2	:00	
1	A1	Pos	ponse		Clear Time		Alarm	Res	ponse		Clear Time	
Time	Alarm Yes	7,63	ponse				Yes 🔲					
16:52	No BY]	No ⋤					
Comments	7047	241 1	DAT ('n/	fen)		70	5241.	DAT	(h/ -	as/_	
	n/o Re	ىنى مى	or files				wo	Ram	/Dust +. 1	fan		
Trial No.	Distance / C	र्	Chall. Time	e ·]	Distance	10 fr	Chall. Tim	e		
2	Alassa	Per	ponse		Clear Time]	Alarm	Res	sponse		Clear Time	
Time	Alarm Yes	1100	porioc			1	Yes 🗆					
17:21	No 🔯						No X					
Comments											-	
Comments												
	Distance		Chall. Tim	ie		7	Distance		Chall. Tir	ne		
Trial No.					Clear	์ 	Alarm	Re	esponse		Clear Time	
	Alam	Res	sponse		Time	-	Yes 🗆			1		
Time	Yes □ No □						No 53					
	<u> </u>	1 2 442	- 11	L				705	242, SIL	_		
Comments	0.05	1 <u>642</u>	S16 D/C #	211	on R	45	Uven	nisht				
				- 1		Г		· 1		 i	Clear	
Post-test	Alarm		Response	İ	C le ar Time		Alar	m	Response	•	Time	
H	Yes ⊠ No	, _	BLS 2m	$\overline{}$			Yes 🛛	No 🗆	This La	w		
G	Yes 🔼 No	, 🗆	MRU Hi						NRV	49		
ı	704	741					TU	5 24 J.	DAT			

	h-Field	1			lmtc	uforonce Mal	erial·	Blead		
Fest Location:			•			•	L 0 20			
Date:	9/2/98				-					
Temperature:	76°F				We	ather.	en List	6996 5703 STO	x.m	
	Det S/N		S/W\	/er			et S/N	7 ~	sw	Ver
	980206-0	,4 n	502			98	0206-05	d d	1502	0-1
		<u></u>	27°¢			L			لإبار	
10:40Am Pre-test	Alarm	Respons		Clear Time	$\Big]$	Ala	rm	Respons	е	Clear Time
н	Yes No [1345 M	E ()]	Yes 🔯	No 🗆	BLS LO	V	
G	Yes No [Yes 🔼	No 🗆	INRU M	ĖŊ	
					_ ,			····		
Trial No.	Distance 10 +	Chall. Tim	e 2:	w	ַוֹ וַ	Distance	lufr	Chall. Tim	e 2	700 1
1	Alarm	Response		Clear Time		Alarm	Res	ponse		Clear Time
Time	Yes 🗆					Yes 🗆				
10:54	No 158					No 🗷				
Comments	T042	14. DA7				70	5244	047		
			· ···							
Trial No.	Distance	Chall. Tim	ne			Distance		Chall. Tin	ne	
2 2	Alarm	Response		Clear Time	1	Alarm	Res	sponse		Clear Time
Time	Yes 🗆					Yes 🗆				
11)40	No 🙇		<u> </u>		_	No 💢			<u> </u>	
Comments										
										
Tinks	Distance	Chall, Tin	ne		7	Distance		Chall. Ti	me	
Trial No.	Alarm	Response		Clear Time	٦	Alarm	Re	esponse		Clear Time
Time	Yes 🗆			<u> </u>		Yes 🗆				
Modi	No [3.					No 🗷				
Comments	70424	5.51h				7	05243	711		
									,	
		T	T	Clear				D	_	Clear
Post-test	Alarm	Response		Time		Ala		Respons	e 	Time
Н	Yes □ No □					Yes 🗆	No 🗆			
G	Yes □ No □	1	- 1		1 1	Yes 🔲	No 🗆	1		<u> </u>

									•
Test Location:	M- Fiz	lj		Interferen	ice Ma	nterial:	570	<u> </u>	
Date:	9/2/98			Operator		Loza	1		
Temperature:	77°F			Weather.					
,				г					···
	Det S/N		S/W Ver			Det S/N TO 206-C			Ver
	980206-	14 M	50204		1 0	10 200 0	ے ل	V15	020-1
			Clear] [D		Clear Time
Pre-test	Alarm	Response			Ala		Respons		time
H .	Yes 🜠 No 🗆	<u> </u>		┥ ├───	<u>⊠</u>	No 🗆	_	1E)	
G	Yes 🔀 No 🗆	NRU ME	V		<u> </u>		I VICO I	121	
	Distance / O 47	Chall, Time	2:00	Dista	псе	101+	Chall. Tim	e Z	.' 00
Trial No.	Distance / U 47		Clear						Clear
		esponse	Time	Alar Yes			ponse		Time
Time	Yes □ No ⊠			No	_ / I				,
11:19				To	52	46. DA7			
Comments	704246.0A								
	Distance	Chall. Time	:	Dista	nce		Chall. Tim	ne	
Trial No.	Distance		Clear	1 =					Clear Time
2		esponse	Time	Alar Yes		Kes	ponse		TRITE
Time	Yes 🔲			No	₽ P				
11:21	A L								
Comments			·						
		Chall, Time		Dista	nce		Chall. Tin	ne	
Trial No.	Distance	Chail. Time	Clear					Ī	Clear
3	Alarm R	esponse	Time	Ala		Re	sponse		Time
Time	Yes 🗆			Yes No					
11:28	No St			ــــــا لــــــــا		- 745	511-	1	
Comments	T04247	112				0.5 24	, <u> </u>		
						7			
	Alarm	Response	Clear Time		Alar	m	Response	,	Clear Time
Post-test H	Yes No 🗆			Yes	0	No □			
G	Yes No 🗅			Yes		No 🗆			

	/	1.1					Γ (2	
Fest Location:	M-F.	ولط		Interfere			1) 52	
)ate:	9/2/98			Operato	r	602	ل0	
Temperature:				Weather	-			
temperature.								
	Det S/N		S/W Ver		1	et S/N		S/W Ver
	950206	-04 M	5020-1		980	206-05	<u> </u>	50207
	Alarm	Respons	Clear e Time		Ala	m	Response	e Clear Time
Pre-test H	Yes 🗷 No 🛭			Ye	s 🔼	No 🗆	BLS M	E0
G	Yes 🔀 No 🖸			Ye	s 🔯	No 🗆	MRV to	w
			<u> </u>				P	E
Trains.	Distance 10 ft	Chall. Tim	e 2:00	Dista	ance	10 FE	Chall. Tim	e 2100
Trial No.			Clear			<u> </u>		Clear
		Response	Time	Ala Yes			ponse	Time
Time	Yes 🗆			No	₽X			
11:43	No 🗷			J <u> </u>		5 248	047	
Comments	Toy 248.	DA7				73 200	ו אעי	
				- I			Chall Tim	
Trial No.	Distance	Chall. Tim	e	Dist	ance		Chall. Tim	
Trial No.		Chall. Tim	e Clear Time	1 =	ance	Res	Chall. Tim	Clear Time
			Clear	Ala		Res		Clear
Time	Alarm F		Clear	Ala	arm	Res		Clear
7 Time 11745	Alarm F	Response	Clear	Ala	arm			Clear
Time	Alarm F		Clear	Ala	arm		sponse	Clear
7 Time	Alarm F Yes No	Response	Clear Time	Ala Yes No	arm		sponse	Clear Time
Time 11:146 Comments Trial No.	Alarm F	Response	Clear Time	Ala Yes No	am em		sponse fcy	Clear Time
Time 11:146 Comments	Alarm F Yes No No Distance	Response	Clear Time	Ala Yes No	am em	(لا ک	sponse fcy	Clear Time
Time 11:146 Comments Trial No.	Alarm F Yes D No S Distance	Response	Clear Time	Ala Yes No	tance	(لا ک	fcy Chall. Tir	Clear Time
Time 11:75 Comments Trial No.	Alarm F Yes D No S Distance	Response Q \(\frac{1}{2} \) Chall. Tin Response	Clear Time	Ala Yes No	arm D	(لا ک	fcy Chall. Tir	Clear Time
Time 11:75 Comments Trial No. 3	Alarm Yes D No S Distance Alarm Yes M G-1	Response QLI Chall. Tin Response	Clear Time	Ala Yes No	tance	(لا ک	fcy Chall. Tir	Clear Time
Time 11:75 Comments Trial No. 3 Time 11:55	Alarm Yes No No No No No No No No No No	Response QLI Chall. Tin Response	Clear Time	Ala Yes No	tance	(لا ک	fcy Chall. Tir	Clear Time
Time 11:75 Comments Trial No. 3 Time 11:55	Alarm Yes No No No No No No No No No No	Response QLI Chall. Tin Response	Clear Time	Ala Yes No	tance	ر کا ا Re	fcy Chall. Tir	Clear Time Clear Time Clear Time
Time 11:75 Comments Trial No. 3 Time 11:55	Alarm Yes	Chall. Tin	Clear Time Clear Time Clear Time	Ala Yes No	tance	ر کا Re	Chall. Tiresponse	Clear Time Clear Time Clear Time Clear Time
Time 11:75 Comments Trial No. Time 11:55 Comments	Alarm Yes	Response QLI Time Response Chall. Time Response Cli NE	Clear Time Clear Time Clear Time	Ala Yes No	tance arm Alar	Re No 🗆	Chall. Tiresponse Response	Clear Time Clear Time Clear Time
Time 11:75 Comments Trial No. Time 11:55 Comments	Alarm Yes	Response Chall. Tin Response Cow Response Response Response	Clear Time Clear Time Clear Time	Ala Yes No Pes	tance arm Alar	ر کا Re	Chall. Tiresponse Response ISLS M INICU M	Clear Time Clear Time Clear Time

	s. 1			Aev-	ساس	Ten be	m 690	(131 Detense 14t
Test Location:	M-Field			Interfer	ence Mate	erial:	tFFF va	pou
	M-Field 9/2198		m	L-F -		L020)		
Date:		-		•			4414	
Temperature:	87°F			vveaum	*i. <u>-'</u> _	1/0101		
	Det S/N		S/W Ver		De	et S/N	7 -	S/W Ver
	980206-0		020-1		78	0206-05	- m	5020-1
	740206-0	I MAS	020-1					
			Clear		A I		Response	Clear Time
Pre-test	Alarm	Response	Time	┤┝	Alar	No 🗆		
н	Yes 🔀 No 🗆	BLS Lon	·	ا ⊢	es 🔯		DLS LOL	
G	Yes 🕅 No 🛘	NEN MA	2	J L	es	No 🗆	MRU M	<u> </u>
				, —				
Trial No.	Distance /oft	Chall. Time		Dis	tance	10tT	Chall. Time	
			Clear Time		larm	Res	ponse	Clear Time
	,	esponse	Title	-	s 🗆			
Time	Yes D			No	反			·
13/26					70	5 251	. 047	
Comments	TOY 251.1	w/fa	<u> </u>				f94	
				٦ [ك	stance		Chall, Time	e
Trial No.	Distance	Chall. Time		 	Starioc			Clear
2	Alarm Re	esponse	Clear Time	/	Narm	Re	sponse	Time
Time	Yes 🗆			7	es 🔲			
13:31	No 🔯			N	o DX			
Comments								
				7 6	istance		Chall, Tin	ne
Trial No.	Distance	Chall. Time		╛╠	- Islance			Clear
3	Alarm R	esponse	Clear Time		Alarm	R	esponse	Time
Time	Yes 🗆			7 7	es 🔲			
17:17	No EX	·			10 P	ļ		
	To4 252	CIL			70	5 2	57.514	
Comments	101-31	<u> </u>					· · · · · · · · · · · · · · · · · · ·	
							i	Clear
.	Alarm	Response	Clear Time		Alar	m	Response	
Post-test	Yes No	· · · · · ·		7	es 🛚	No 🗆		
н G	Yes D No D			Y	es 🗆	No 🛘		
G		1						

						LP and Preso	akfree)
Test Location:	M-Field			Interference Ma	nterial:	LP	
	9/2/98			Operator:	LOZOJ	unt Prese	-rutu
Date:	87°P			Weather.			
Temperature:	XII						
	Det S/N		S/W Ver	l l	Det S/N	1 1	S/W Ver
	980206-	oy n	5020-1	98	50206-09	<u> </u>	
	<u></u>			_			
-	Alarm	Respons	Clear e Time	Ala	arm	Response	Clear Time
Pre-test H	Yes X No [Yes 🔼	No 🗆	BLS LOW	
G.	Yes 🔯 No [1000		Yes 🎾	No 🗆	NRV ME	2
_							
Trial No.	Distance 3+t	Chall. Tim	e	Distance	Jfr	Chall. Time	
(Clear Time	Alarm	Res	sponse	Clear Time
Time	Alarm Yes 🗆	Response	time	Yes 🗆			
1347	No 🛛			No 🔯			
	Toy 257.	DAT		705	253.	DAT	
Comments	on Clu	th W	Ears .	U		e4 w/ 1	4
	Distance	Chall, Tim		Distance		Chall, Time	
Trial No.	Distance		Clear	1			Clear
2	Alarm	Response	Time	Alarm	Re	sponse	Time
Time	Yes 🗆			Yes D			
13:52	No 又				<u> </u>		
Comments							
						Ob all 7:	
Trial No.	Distance	Chall. Tin	ne	Distance	_	Chall. Time	
7	Alarm	Response	Clear Time	Alarm	R	esponse	Clear Time
Time	Yes 🗆		<u> </u>	Yes 🗅			
17:5%	No D			No 💢			
	704 25	t 5112			10525	4 516	
Comments							•
	·		Clear				Clear
Post-test	Alarm	Response	1		arm	Response	Time
н	Yes No 🗆	·		Yes 🗆	No 🗆		
G	Yes □ No □		<u> </u>	Yes 🗆	No 🗆		

	M- Fi	-1 (no Mo	torial:	SA oi	(
Test Location:									
)ate:	9/498			Operato		<u>L04</u>	-		
Temperature:	85'F			Weather	r7	19, RIL	J		
	Det S/N 980 Lo(-	04 M	SW Ver 5020-1			0et S/N 2 0 6-0 5	- m	502	Ver D — J
Dec tost	Alarm	Respons	Clear e Time		Ala	m	Respons	se	Clear Time
Pre-test H	Yes 🗷 No [Ye	s 🗷	No 🗆	BLS L	سالا	
G	Yes 🗷 No [·		Ye	s 🗖	No 🗆	MRU L	1EH	
	Distance 74	Chall. Time	e 2:00	Dista	ance	7 tc	Chall. Tin	ne 2	240
Trial No.		Response	Clear Time	Ala			ponse		Clear Time
Time	Yes 🗆			Yes No	D Ø				
14:39		<u> </u>		┙ └──		257.0	47	<u>.l</u>	
Comments	Tox 257. 0	AT Clock			70)	751.0	<u>.n.</u> /		
		Chall. Tim		Dist	ance		Chall. Tir	me	
Trial No.	Distance		Clear	1 =	1	Res	sponse		Clear Time
Time	Alarm F	Response	Time	Ala Yes			50000	+	
14:43	No X			No	P			<u> </u>	
Comments							·		
Trial No.	Distance	Chall. Tim	е	Dist	ance		Chall. T	ime	
3	Alarm	Response	Clear Time	Ali	am	R€	esponse		Clear Time
Time	Yes 🗆			Yes	; □				
	No 7				<u> </u>	E 200	<i></i>		
Comments	7047	59, SIL			10	5 258	131L		
Post-test	Alarm	Response	Clear Time		Alar	m	Respons	se	Clear Time
Н	Yes 🗆 No 🖸			Yes		No □			
G	Yes 🔲 No 🗆			Yes		No 🗆			

Test Location:	m P	rold		Interference Material: RIC	- Rifle
	9/2/98	<u> </u>	_	Operator: Lo Zos	Duce leaver
Date:			-	Weather: 75% Ru	
Temperature:	820F			7 370 100	
	Det S	5/N	S/W Ver	Det S/N	S/W Ver
Pre-test	Alarm	Respo	Clear nse Time	Alarm Re	Clear esponse Time
H	Yes X N	0 0 045 1	الندار	Yes 🛛 No 🗆 🗓	<i>L</i> ,
G.		· - NRV		Yes D No D (YR	V 14
Trial No.	Distance	Chall. T	ime	Distance Cha	all. Time
(Alarm	Response	Clear Time	Alarm Response	Clear Time
Time	Yes 🗆			Yes 🗆	
1471	No K			No 💆	
Comments	704	255, DAT		TO5 755. DA-	7
Commente		on clock of	fan		
		Chall. T	ime	Distance Ch	nall. Time
1 1	Distance			1	
Trial No.			Clear Time	Alarm Response	Clear Time
	Alarm	Response	Clear	Alarm Response	1
7 Time			Clear	,	1
2	Alarm Yes No		Clear Time	Yes 🗆	1
Time iY:20 Comments	Alarm Yes No	Response	Clear Time	Yes 🗆 No 🔯	1
7 Time iY;20	Alarm Yes No Distance	Response	Clear Time	Yes DNO 🔯	thall. Time
Time iY:20 Comments	Alarm Yes No	Response Chall.	Clear Time	Yes Distance C	thall. Time
Time iY:20 Comments Trial No. Time	Alarm Yes No No Distance Alarm	Response Chall.	Clear Time	Yes D No A Distance C Alarm Respons	thall. Time
Time iY:20 Comments Trial No.	Alarm Yes	Response Chall.	Clear Time	Yes	chall. Time Clear Time
Time i'\'!20 Comments Trial No. Time i\';25	Alarm Yes	Response Chall. The Response	Clear Time	Yes	chall. Time Clear Time
Time i \cdot \cdot 20 Comments Trial No. Time I\cdot 25 Comments	Alarm Yes	Response Chall. The Response	Clear Time Clear Time Clear Time	Yes	chall. Time Clear Time
Time i'Y'.20 Comments Trial No. Time i'Y'.25	Alarm Yes	Response Chall. The Response of the Response	Clear Time Clear Time Clear Time	Yes	thall. Time Clear Time Clear Clear

				995	EPA	Reg 7405	-60-48295
Test Location:	M-field	1		DE E	T I Material: A	nieur Re evisul	-60-48295 pellet
	9/2/98				L 0	_	
Date:		<u></u>		Operator:			
Temperature:	86'E			Weather:	70/1	CK	
	Det S/N		S/W Ver	[Det S/N		S/W Ver
	980206-0	1 1	020-1	9	80206-00	5 m	5020-1
	7 80 40		1	<u> </u>		ئنا لـ),,,,
			Clear			Bassass	Clear
Pre-test	Alarm	Response	Time	Yes 🗵	Alarm No 🗆	Respons	
н	Yes No			Yes Z		MRV m	
G	Yes 🗖 No □	NRV LOW		l les k	, iii u	1 (AKO)	וכין
			A] [5:	-3 C	Chall. Tim	e 2:00
Trial No.	Distance 3+	Chall. Time	2:00	Distance	3fr	Cilan. Till	
1	Alarm R	esponse	Clear Time	Alarm	Res	sponse	Clear Time
Time	Yes 🗆			Yes 🗆			
14:55	No 🙇			No 🛱			
Comments	704259.	DAT			705 25	9 04,	· .
	0-	clock	yfan		<u>-</u>		
- : : No	Distance	Chall. Time		Distance	:	Chall, Tin	ne
Trial No.			Clear	1			Clear
		esponse	Time	Alam		sponse	Time
Time	Yes 🗆			Yes No R	ì		
15:04	No 💆			J L		. •	
Comments							
Trial No.	Distance	Chall. Time		Distance	e 	Chall. Tii	me
7			Clear Time	Alarm	Re	esponse	Clear Time
Time	Alarm R Yes □	esponse	TIME	Yes [
	No 🕱			No 5			
15:10		50. 51L		To'	5 260.5	16	
Comments	101 0	. SIF					•
Post-test	Alarm	Response	Clear Time	Α	larm	Respons	e Clear Time
Post-test H	Yes ♥ No □	ALS Lon		Yes 🔯	No 🗆	ALI LO	n
G	Yes No 🗆	lunc Hi		Yes 🛛	No 🗆	IVRV M	EO

TUY 211. 047 TO 5 261. DA7

	(a G	ii				3	250 DE	ET	. 16. L
Test Location:	M-Fit	, , ,		Inter	ference I	_		G. NE	perior
Cate:	9/3/51			•	rator:		モザ		
Temperature:	64°F -	7 690F		Wea	ether.	95% RH	0	nfi	<u> </u>
•	Det S/N		S/W Ver		Γ	Det S/N		sw	Ver
	980206	-04 1	4 5021)-1		9	80206-	es u	1502	0-1
	70000		13						
7:25A		B	Clear e Time] [Alarm	Respons	e	Clear Time
Pre-test	Alarm Yes ★ No [Response	150	┨┠	Yes 🛭		By to	TEN	·
H G	Yes No I	100	(F)	1	Yes 🔀	L No □	NRU M		
G				י נ					
Trial No.	Distance 3 +	Chall. Time	e Z:00		Distance	3- (r	Chall. Tim	ie Z,	200
marino.			Clear	ĪĪ	Alam	Re	sponse		Clear Time
Time		Response	Time	 	Yes 🗆		•		
	Yes 🗆				No IS				
を必ら Comments	Toy 26), DAT				T057	62, DA-	Ţ	
Commente	on (fan						
Trial No.	Distance 3 4	← Chall. Tim	e 2:W	7 [Distance	3 44	Chall, Tir	ne Z	OD
Trial No.			Clear	֓֞֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֡֓֓֡֓֓֡֓֓	Alarm	R	esponse		Clear Time
Time	Alarm Yes	Response	Time	-	Yes [
8712	No ST				No 🏂	r			
	<u></u>								
Comments									
	Distance f	Chall. Tim	ne	7	Distanc	e /ft	Chall. Ti	me	<i></i>
Trial No.	Distance ((Clear	Ħ	<u> </u>				Clear Time
8:17	Alarm	Response	Time	_	Alarm		Response	-	ime
Time	Yes 🗆				Yes [X			
	No A	7 (11)	<u></u>		L		J. 51L	-	
Comments	Moul c	1031h							
							<u> </u>		Clear
Post-test	Alarm	Response	Clear Time			Alarm	Respons	se	Time
H	Yes No	1			Yes [No 🗆			
G	Yes □ No □				Yes [No 🗆			

Test Location:	M-Firk			inter	ference Mate	M567	PRIME EX	CHAUS 7
Date:	9/3/98					L020	ز	
	73°F			Wea	ather:	802 RH		
Temperature:	Det S/N 9 TU26-0	Y M	sw ver 5020-1			et S/N 02 U(- U S	M	SW Ver 5U2D-Z
			Clear	7 [Alar	m	Response	Clear Time
Pre-test	Alarm	Response		┪┠	Yes 🔯	No 🗆	BLS M	
Н	Yes 🛛 No 🗆	1	150	1	Yes 🐧	No 🗆		ΕŊ
G	les & Z	1 CARO P	1E()	J L	L	ost Cim	Re-Su	(Lempy los
	Distance 25 ft	Chall, Time	2:w	7 [Distance C		Chall. Time	
Trial No.		esponse	Clear Time	֓֟֓֟֓֓֓֓֓֓֓֓֟֟֓֓֓֓֟֟֓֓֓֓֓֟֟֓֓֓֟֟֓֓֓֓֟֓֓֓֟֓֓֓֟֓֓֓֟֓֓֓֟֓֓֟֓֓	Alarm	Res	ponse	Clear Time
Time	Yes ⊠ ∨ X	Lin		1 1	Yes 🔯 No 🗆	\vee X	Lun	
9:16	T0426	+ DA7			70	5764	DA7	
Comments	glarm who	Turbin	shar of 1	_ (i	1	elect	brazes.	JPT 0
	Distance	Chall. Time		7 [Distance		Chall. Tim	
Trial No.		esponse	Clear Time	֓֟֞֓֓֓֓֓֟֟֓֓֓֓֓֟֟֓֓֓֓֓֓֓֓֓֓֟֓֓֓֓֓֓֓֓֓֓	Alarm	Re	sponse	Clear Time
Time	Yes 🔀 💢	Lun			Yes 🔀 No 🛚	X	Lun	·
G:72 Comments	alskn	han tuck	in Shild	4(6	*4/	EJeu	, JPF	e should
							Chall. Ti	me
Trial No.	Distance	Chall. Tim		=	Distance		Citali. 11	Clear
3	Alarm R	esponse	Clear Time		Alarm	R	esponse	Time
Time	Yes 🗆				Yes 🗆			
9:01	la enil				No X	5 765	CI (-	
	No 🗵						- I	
Comments	TO4265	7. SIV			10	> (0)		•
Comments		5. SIV				> 20 %		
		Response	Clear Time] [Ala		Respons	Clear Time
Comments Post-test	T04265		I.					l <u>—</u>

	· • • • • • • • • • • • • • • • • • • •	u I	W	Αί I	P/I+ and refference Ma	Spy -	•	1_	
Test Location:	M- F.	14	Touch	Int	efference Ma	terial:	Nectici	φ	
Date:	9/3/98			Op	perator:	Loz	os .		
Temperature:	77°6			W	eather:	709, rul			
				1		S-4 C/N	–	S/W	/ Ver
	Det S/N	1 1	S/W Ver		i	Det S/N 206-05	<u>, , , , , , , , , , , , , , , , , , , </u>	ا يمري	j
	980246-04	m5	020-1		7 80	246-09		1304	<u>/~1</u>
		T	Clear	7					Clear
Pre-test	Alarm	Response	Time		Ala		Respon	se	Time
н	Yes 🔼 No 🛘	OU Hi			Yes 🔀	No 🗆		161)	
G	Yes No 🗆	NRU ME	<u>/</u>	_	Yes 🛚	No 🗆	NRU	MED	<u> </u>
				_					
Trial No.	Distance 3 ft	Chall, Time	2:W		Distance	3 fc	Chall. Tin	ne 2	:ພ
-			Clear Time]	Alarm	Res	ponse		Clear Time
<u></u>	7.10	sponse	Time	$\frac{1}{2}$	Yes 🗆		<u>, </u>		
Time	Yes 🔲				No 🔯				
9:47		<u></u>		لـ		266. DA	7		
Comments	T04266	DA7			103	DOV. OA			
							Chall, Ti		
Trial No.	Distance 74r	Chall. Time			Distance	Itr	Citali. 71	T	
2	Alarm Re	sponse	Clear Time		Alarm	Res	sponse		Clear Time
Time	Yes 🗆			1	Yes 🗆		-		
9:50	No SZ				No 📈				
1.3				_			•		
Comments									
				7			Chall, T	imo	
Trial No.	Distance —) [Chall. Time		╛	Distance	<u>→1fr</u>	_ Chail. I	unie	01
3	Alarm Ri	esponse	Clear Time		Alarm	Re	esponse		Clear Time
Time	Yes 🗆			7	Yes 🗆				
5.27	No B				No 💢	<u> </u>			
	TV126-	7. 511-			701	5 767.	516		
Comments	1-(20	(n - 1 V							
				. r					Class
	Alarm	Response	Clear Time		Ala	rm	Respon	se	Clear Time
Post-test	Yes No 🗆				Yes 🗆	No 🗆			
н	Yes No				Yes 🗆	No 🗆			
	, rea () '** 🛏			, 1		_			

_	M-Fiel	(1 to aform	Ma	iterial:	Fu _z C)-1 <	hi
Test Location:	5/3/58	<u> </u>				,		1 9	rujoc
Date:				Operato		L07			
Temperature:	79°F			Weathe	·	705, RE			
	Det S/N		S/W Ver			Det S/N (U 20 6- 0	5	sm In suz	Ver 0 - 1
	98006-	77 M	SUZD-1]			ا لـــــ		<u>~</u> ,
Pre-test	Alarm	Response	Clear Time		Ala	ım	Resp	onse	Clear Time
Н	Yes 🔀 No [I Rus Hi	•	Ye	s 🔼	No 🗆	RLJ	MED	
G	Yes 🖄 No 🛭	1 MRV Lun		Ye	s 💆	No 🗆	YW	MED	
									·
Trial No.	Distance 25-	Chall. Time	7:00	Dista	ance	25-fr	Chall.	Time 2	: 00
	Alarm F	esponse	Clear Time	Ala	m	Res	sponse		Clear Time
Time	Yes 🗆			Yes					
10,10	No ISK			No	×				
Comments	704 269	DAT			70	5 268	DA7		
	1 Min Tursing	harmyp,	Zmi Smu	ke_					
Trial No.	Distance	Chall. Time		Dist	ance		Chall.	Time	
2	Alarm F	esponse	Clear Time	Ala	m	Re	sponse		Clear Time
Time	Yes 🗆			Yes					
10:19	No 🖾			No	R				
Comments									
							<u></u>		
Trial No.	Distance	Chall. Time		Dist	ance		Chall	. Time	
3	Alarm F	Response	Clear Time	Ali	em	Re	esponse		Clear Time
Time	Yes 🗆			Yes					
IV:27	No 🗷			No	P				
Comments	704269	516			705	269	516		
					_			· · · · · · · · · · · · · · · · · · ·	
			Clear				_		Clear
Post-test	Alarm	Response	Time		Alar		Resp	onse	Time
Н	Yes No No	<u>.</u>		Yes		No 🗆			
G	Yes No 🗆		1	Yes	u	140 🖂			

Test Location:	M-Fiell			Interference Ma	terial: <u>M</u>	76 Smike	Grenglie
Date:	9/3/98			Operator:	L0-6	s	
Temperature:	789 -	, 82°F		Weather.	15. RH-	> 23% ln 2	mpit
	Det S/N 980206-0	1 1	SW Ver	1	0et S/N 120 6-05		SW Ver
Pre-test	Alarm	Response	Clear Time	Ala	m	Response	Clear Time
н	Yes No 🗆	BLS Lu	٠	Yes 🔯	No 🗆	BLS Lan	,
G	Yes 🔼 No 🗆	URU ME	:)	Yes 🙇	No 🗆	MRV ME	,
						Chall. Time	54.
Trial No.	Distance 20 (Chall. Time	5re	Distance	2016	Chail. Time	5 rec
	Alarm R	esponse	Clear Time	Alarm	Res	sponse	Time
Time	Yes 🗆			Yes 🗆			
12:14	No 🗵			No X			
Comments	704270.	DA7		7	5770	DAT	
	WRa	m/Our Ei	lear_				
Tital No.	Distance	Chall. Time		Distance		Chall. Time	
Tital No.	Distance	Chall. Time	Clear	Distance	Re	Chall. Time	Clear Time
	Distance	•			Re		Clear
Time	Distance Alarm R	Chall. Time	Clear	Alarm	Re		Clear
7 Time	Distance Alarm R Yes	Chall. Time	Clear	Alarm Yes	Re		Clear
Time	Distance Alarm R Yes	Chall. Time	Clear	Alarm Yes	Re		Clear
Time [1:.3e Comments	Distance Alarm R Yes	Chall. Time	Clear Time	Alarm Yes	Re		Clear Time
7 Time (1:.3°	Distance Alarm R Yes D No S	Chall. Time esponse Chall. Time	Clear Time	Alarm Yes No No		sponse	Clear Time
Time [1:.36] Comments Trial No.	Distance Alarm R Yes D No SX Distance	Chall. Time	Clear	Alarm Yes No Distance		sponse Chall. Tim	Clear Time
Time [1:3e Comments Trial No.	Distance Alarm R Yes D No S	Chall. Time esponse Chall. Time	Clear	Alarm Yes No No Distance Alarm		sponse Chall. Tim	Clear Time
Time [1:3e Comments Trial No.	Distance Alarm R Yes No X Distance Alarm R Yes No No No No No No No No No N	Chall. Time esponse Chall. Time	Clear	Alarm Yes Distance Alarm Yes No No S	Re	sponse Chall. Tim	Clear Time
Time [1:30 Comments Trial No. Time	Distance Alarm R Yes D No X Distance Alarm R Yes D No X	Chall. Time esponse Chall. Time	Clear	Alarm Yes Distance Alarm Yes No No S	Re	Sponse Chall. Timesponse	Clear Time
Time [1:3e Comments Trial No. Time Comments	Distance Alarm R Yes D No X Distance Alarm R Yes D No X TO 9 271	Chall. Time esponse Chall. Time esponse	Clear	Alarm Yes Distance Alarm Yes No No S	Re 705 7-	Sponse Chall. Timesponse	Clear Time
Time (1:30 Comments Trial No. Time Comments	Distance Alarm R Yes D No M Distance Alarm R Yes D No M Alarm Alarm	Chall. Time esponse Chall. Time Response	Clear Time	Alarm Yes Distance Alarm Yes No No No No No No No No No No	Re 705 7-	Chall. Timesponse	Clear Time Clear Time Clear Time
Time (1:.3e Comments Trial No. J Time Comments	Distance Alarm R Yes D No X Distance Alarm R Yes D No X Alarm R Yes D No X Alarm No X Alarm No X No X No X No X No X No X No X No X No X No X No X	Chall. Time esponse Chall. Time esponse	Clear Time Clear Time Clear	Alarm Yes No No No No Alarm Alarm Alarm	Re 705 7-	Chall. Timesponse	Clear Time Clear Time Clear Time